THE

AMERICAN GAS-LIGHT JOURNAL

Devoted to GAS-LIGHT, WATER-SUPPLY, and SEWERAGE.

JOHN B. MURRAY & CO., BANKERS, No. 40 WALL STREET, NEW YORK, PROPRIETORS.

"LET THERE BE LIGHT!"

FIRST YEAR.—No. 4. NEW YORK, SATURDAY, OCTOBER 1, 1859. $3 PER ANNUM.

TO GAS FITTERS AND PLUMBERS.

WROUGHT IRON GAS PIPE HOOKS, HOWever small a matter for gas fitters, are often a trouble for not having them sometimes on hand when required. L. WARFELER & Co., 94 Beekman street, N. Y., have always on hand several hundred kegs of all sizes, from ¼-inch to 2-inch. They are made of the best quality horse-shoe nail-iron, and are warranted not to break. They also keep constantly on hand a large assortment of all kinds of materials for Plumbers, such as China Wash Basins, Closet Basins, Pan Closets, Bath Tubs, Boilers, Brass and Silver-plated Cocks, Brass and Iron Pumps, Hydraulic Rams, French Fountain Jets, &c., all at the very lowest prices.

TO INVENTORS.

THE PROPRIETORS OF THE AMERICAN GAS-LIGHT JOURNAL, having completed their arrangements for that purpose, are now procuring Patents for Inventors of all improvements in matters pertaining to GAS-LIGHT, WATER SUPPLY, DRAINAGE, SEWERAGE &c., &c., in the United States, Great Britain, France, Holland, Germany, Belgium and Russia; also in South and Central America, where the Gas-lighting and Water Supply are becoming rapidly identified with the age.

Opinions of the patentability of inventions are given cheerfully, free of expense, on receipt of a model or drawings, with full description. Apply to, or address,

JOHN B. MURRAY & CO.,
Proprietors of the AMERICAN GAS-LIGHT JOURNAL,
No. 40 Wall street, New York City.

CHECK-BOOKS FOR GAS CONSUMERS.

GAS METER CHECK-BOOKS, ARRANGED WITH a meter index to record the consumption of gas for twelve months, detecting at once any over-charge by a gas-light company and rendering a mistake impossible. Price 25 cents each, or $15 per hundred, delivered free of postage. Postage stamps can be remitted in payment.

Address—
H. M. THOMPSON,
Office of the AMERICAN GAS-LIGHT JOURNAL,
No. 40 Wall street, New York City.

THE MANAGER OF A PROVINCIAL GAS-Works in England, is desirous of obtaining a similar situation in the United States. He has the many years' experience in gas-works in all their various departments. He has first-class testimonials, which will be seen by applying at the office of the AMERICAN GAS-LIGHT JOURNAL.

COKE FOR SALE,

AT THE WORKS OF THE MANHATTAN GAS-Light Company, 18th street station, corner 10th avenue and 18th street; and 14th street station, corner Avenue C and 14th street. $2.50 per chaldron in the yard. Cartage, seventy-five cents.

LAND IN CANADA FOR GAS-LIGHT SHARES.

Town of	Cobourg,	Northumberland Co.....	14	acres.
Do.	Hamilton,	do.	100	"
Do.	North Monaghan,	Peterborough do.	600	"
Do.	South do.	do. do.	100	"
Do.	Dummer,	do. do.	100	"
Do.	Douro,	do. do.	223	"
Do.	Haldimond,	Northumberland do.	200	"

These lands are well located, and will be exchanged on equitable terms for sound, dividend-paying gas-light shares in the United States or British Provinces.

Apply to or address— R. R. L., Toronto, Canada.
Or— Care of Proprietors of AMERICAN GAS-LIGHT JOURNAL, No. 40 Wall street, New York City.

THOMAS NICHOLL,

GAS AND STEAM FITTER AND PLUMBER, Nos. 170 and 172 Centre Street, (next door to N. Y. Gas Co.'s office,) New York. Pipes inserted in Churches, Factories and Dwellings; Chandeliers Regilt; Jobbing promptly attended to.

STATION METERS FOR SALE.

TWO STATION METERS; ONE TO REGISTER 300,000, and one 500,000 feet per day. Apply to the Engineer of the Manhattan Gas-Light Co., at the Works, foot of 18th street, North River.

COKE FOR SALE,

AT THE WORKS OF THE NEW YORK GAS-Light Company. Apply to the Engineer, at the Works, between 21st and 22d streets, East River.

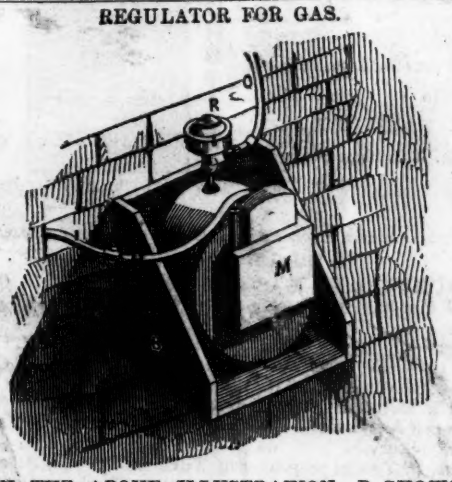
JOHN B. MURRAY & CO.,

BANKERS, No. 40 WALL STREET, NEW YORK City, offer for sale a variety of GAS-LIGHT SHARES, paying eight to twelve per cent. regular dividends; the most sound and reliable security for permanent investment that exists. Those having gas-light shares to sell, as well as those wishing to buy, are invited to communicate with our office.

CANNEL COAL.—A LOT OF CANNEL COAL, IN bulk, from a new mine, of superior quality for gas or coal oil, can be seen at 41 Washington street. Refers to Hillyer, Case & Cox, agents, No. 225 Washington street; J. A. Briggs, No. 25 William street; P. & H. K. Dow, No. 5 Exchange place; M. Beeman or A. Garrett, No. 77 Cedar street, where specimens of this coal can be seen.

CLEGG'S TREATISE ON COAL-GAS MANUFACture, with full instructions upon every detail incident to Gas-making, illustrated by engravings. No gas company or engineer should be without it. The third edition, now being printed in London, is expected by the next steamer. For sale at the office of the AMERICAN GAS-LIGHT JOURNAL, No. 40 Wall street, New York City.

REGULATOR FOR GAS.



IN THE ABOVE ILLUSTRATION, *R* SHOWS the position of the Regulator on the meter, M; *I* the inlet pipe to the meter from the Street main, and *O* the outlet pipe from the regulator to the burners.

This Regulator is constructed on a different plan from any other in use, inasmuch as the "lever" gives security and certainty to the motions of all the working parts, and is so sensitive that all objectionable friction and the liability to clog up and stick fast are entirely avoided.

This Regulator secures—

A usual saving of from 15 to 30 per cent. of gas.

Effectual prevention of all *blowing* of lights, even when only *one* is burning.

A steadier and brighter flame, less heat, *no escape* of unconsumed gas.

Address JOHN H. COOPER, Patentee and Sole Manufacturer,
419 North Seventh street, Philadelphia, Pa.

City, Town, and State rights for sale.

PHILADELPHIA GAS FIXTURE WORKS.

WARNER, MISKEY & MERRILL, MANUFACturers; store No. 718 Chestnut street, Philadelphia. Warner, Peck & Co., No. 376 Broadway, N. Y., would respectfully inform the public that they continue to manufacture all kinds of Gas Fixtures, Lamps, Girandoles, Bronzes, &c., &c., and that their large and varied stock comprises the simplest as well as the most elaborate patterns, designed by their French artists. They also continue to keep at their store, No. 376 Broadway, a large and full assortment of all their manufactured goods. Dealers and others are invited to call and examine. o1 3t

W. W. HEDGES,

ENGRAVER ON WOOD FOR THE AMERICAN GAS-LIGHT JOURNAL, 25 Nassau street, New York.

THE MOST VALUABLE DISCOVERY OF THE AGE.

NO MORE MONOPOLY IN GAS.

The attention of the public is called to "WERNER'S PATENT WOOD AND GAS APPARATUS," by which method we can produce from each cord of wood 15,000 feet of gas, of a brilliancy at least twenty per cent. superior to that produced from coal, and with less than one-half the labor, besides other useful products, which will pay the entire cost of producing, as is shown in the following estimate:

Cost of a cord of wood in New York city	$6.50
" lime for purifying	1.00
" labor for making	2.00
	$9.50

VALUE OF PRODUCTS.

40 bushels very superior charcoal, at 12½ c.	$5.00
100 gallons pyroligneous vinegar, at 3c.	3.00
150 lbs. tar, (equal to Swedish tar)	1.50
	$9.50
Besides 15,000 cubic feet of gas, which, at New York city prices, is worth	$37.50

The Apparatus can now be seen in operation at the Fair of the American Institute, Palace Garden, Fourteenth street, corner Sixth avenue, New York.

For further particulars, descriptive circulars, &c., apply at the office of patentees, No. 23 Liberty street, where companies, private individuals, or others, wishing to purchase rights for cities, counties or States, can receive all necessary information.

THE ADVERTISER IS DESIROUS OF EMPLOYment with some Gas Company, south or west, as Agent, Book-keeper, Clerk or Superintendent; has had 8 years' practical experience, and is fully posted in all business details. First-class references can be seen by applying to the editor of the AMERICAN GAS-LIGHT JOURNAL, to whom communications may be addressed.

WILLIAM ROY,

74 BROADWAY, NEW YORK, IMPORTER OF the celebrated PERCETON FIRE-CLAY RETORTS, the quality of which is superior to any other clay yet discovered. Analysis as under:

Silica	62.5	Magnesia	0.3
Alumina	35.0	Prox. of Manganese	0.2
Prox. of iron	0.9	Phos. of iron	0.5
Lime	0.6		

VITRIFIED FIRE-CLAY PIPES, from 2-inch to 36-inch, in lengths of two or three feet; are indestructible, and not affected by gases or acids.

Thomas Edington & Son's PATENT CAST IRON PIPES are cast vertically to any weight required. They can also be coated with Dr. Smith's Solution, which prevents corrosion; adapted for gas and water. Made in lengths of nine and twelve feet, or turned and bored joints.

WROUGHT IRON TUBES and all materials for gas and water works. Fire-Bricks, Fire-Clay, Water Hydrants, Scotch and English Cannel Coal, &c. Kennedy's Water Meters for measuring the flow of water—indispensable to all water companies.

H. P. GENGEMBRE'S

PATENT NON-FREEZING AND NON-EVAPORATING GAS METER FLUID.

A meter once filled with this fluid will require no further attendance; will allow any amount of gas to pass through without affecting the level of the fluid, and will work equally well in winter or summer, however exposed it may be.

The undersigned, wishing it tested as thoroughly as possible, will afford every facility to companies desirous of experimenting with his fluid.

Address A. DOISY, Box 1280, Cincinnati, O.

DAVID JONES,

ORNAMENTAL JAPANNER, No. 243 NORTH SEcond street, Philadelphia, respectfully solicits a liberal share of patronage from the manufacturers of Gas Meters and others. He is prepared to execute all orders for Japanning, promptly and reasonably.

Reference—Code, Hopper & Gratz, Gas Meter makers, Phila.

COLWELL & CO.,

MANUFACTURERS OF PIG IRON AND CAST Iron Gas and Water Pipes, No. 207 North Water street and 206 North Wharves, Philadelphia.

STEPHEN COLWELL, W. DWIGHT BELL,
THEO. TREWENDT, SAMUEL FULTON.

McCREADY, MOTT & BRUNDAGE,

38 BURLING SLIP, NEW YORK CITY,

DEALERS IN

ROSINS ESPECIALLY ADAPTED TO GAS-MAKERS' USE.

N. B.—McC., M. & B. ARE CONSTANTLY PURCHASERS OF ROSIN GAS TAR.

CLIFF'S
ENGLISH CLAY RETORTS.

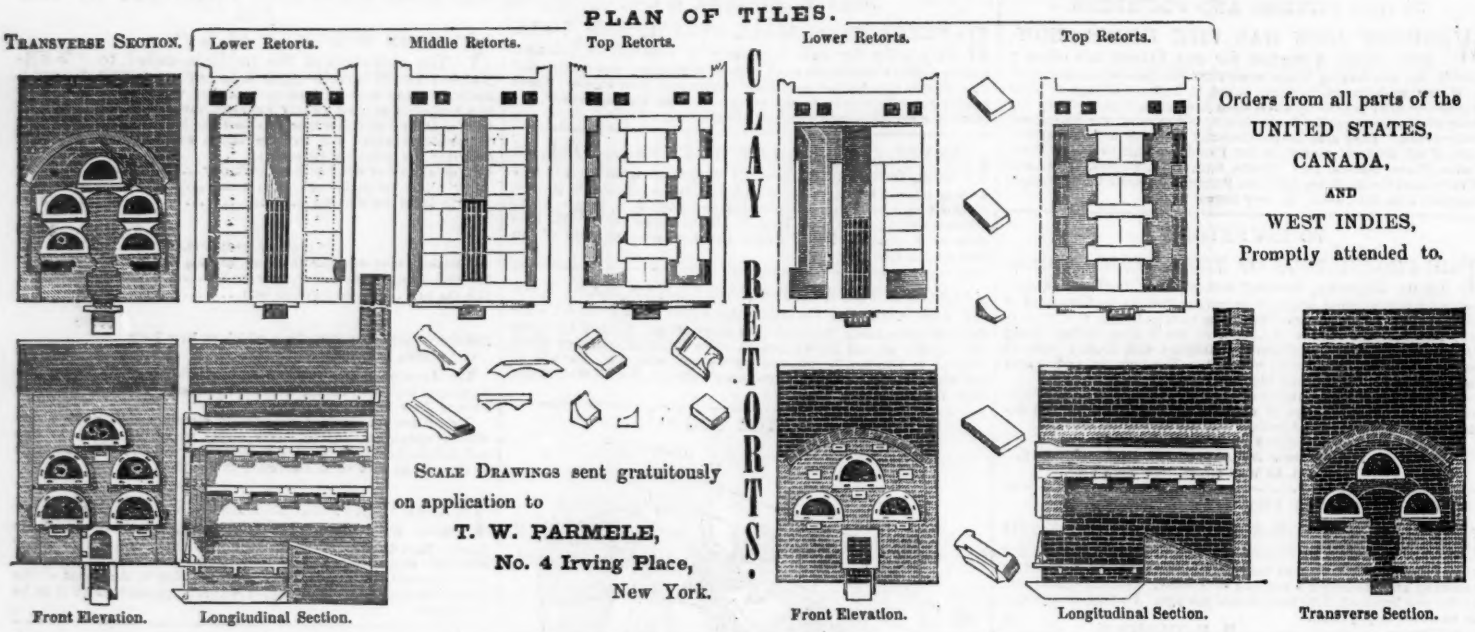
EVERY DESCRIPTION OF FIRE GOODS USED IN GAS-WORKS.

Gas Exhausters, Governors, Furnace Doors, Retort Covers

Castings, Wrought Iron Work, and all Implements used in Gas Manufacture.

T. W. PARMELE,

No. 4 IRVING PLACE, NEW YORK.



Scale Drawings sent gratuitously on application to
T. W. PARMELE,
No. 4 Irving Place,
New York.

Orders from all parts of the UNITED STATES, CANADA, AND WEST INDIES, Promptly attended to.

A COMPETENT PRACTICAL GAS-MAKER wants a situation to take the entire charge of Gas Works. Can refer to present employers.
Address—H. T., Williamsburgh, N. Y., Post-office.

W. ANDERSON,

MANUFACTURER OF GAS BURNERS, NEW Haven Railroad Depot, cor. of Franklin and Elm sts., New York. Scotch Tips constantly on hand. Tips and Burners made to order. Brass Tips for street lights and other purposes made to order.

JOHN NEWKUMET,

PHILADELPHIA FIRE BRICK WORKS, VINE and Twenty-third streets, Philadelphia,
Manufacturer of all kinds of Fire-Brick, Gas-House Tiles, to suit all the different plans in use. Clay Retorts and Dentists' Muffles. Orders filled at short notice.

BUTLERS PATENT PORTABLE GAS-WORKS are designed for Dwellings, Churches, Factories and Country Villages, as well as for large consumers in cities. They make gas from Crude Rosin, and are warranted to make as rich an article, at less than one-half the cost of that made by the old method in Portable Gas-Works, and at one-third the average price of Coal Gas as sold in cities. Great savings in expense of light guaranteed to large consumers.
Works of all sizes furnished to suit applicants. Mains, Service and Distributing Pipes put in. Also, a large assortment of Gas Chandeliers, and other fixtures, always on hand, at the lowest prices.
The Mansion House, Brooklyn, with 250 burners in constant use, make their own gas with my apparatus, with results as stated above. This (with a small one to my store) can be seen in operation by application at my office, where descriptive pamphlets, with the names of numbers who are using them, will be furnished.
JOHN BUTLER,
Nos. 112 Fulton and 15 Henry streets,
Brooklyn, N. Y.

WATERHOUSE & BOWES,

BUILDERS OF GAS-WORKS, RALEIGH, N. C. Gas-Works erected in any part of the United States.

REFERENCES:

James H. Carson,	Pres't.	Charlotte Gas-Works,	N. C.
D. G. Fowle,	do.	Raleigh "	N. C.
J. C. Smythe,	do.	Salisbury "	N. C.
Arch. McClean,	do.	Fayetteville "	N. C.
Joseph A. Waddell,	do.	Staunton "	Va.
A. G. Story,	do.	Little Falls "	N. Y.

Geo. H. Young, proprietor of Waverly, " Miss.
Wm. Johnston, Pres't Char & S. C. R.R., Charlotte, N. C.
A. B. Wood, Agt. Reading Iron W'ks, 57 Maiden l'e, N. Y.
Cornelius Baker, manufacturer of gas fixtures, Phil'a.
G. B. Waterhouse. M. Bowes.

GIRARD TUBE WORKS.

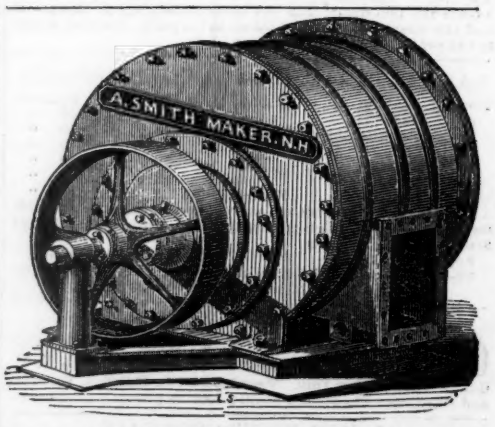
MURPHY & ALLISON, PROPRIETORS.
Wrought Iron Coke-Welded Tubes for Gas, Water, Steam, &c. Wrought, Cast, and Malleable Iron Fittings. Steam and Gas Cocks, Valves, &c.
Also Galvanized Tubes and Fittings.
Office, 1908, Market street, Philadelphia.

THE CONTROLLING INTEREST IN A PROSPEROUS Coal-Gas Company, earning ten per cent. per annum, for sale. Full particulars and abundant evidences will be given by the Proprietors of the American Gas-Light Journal, New York City.

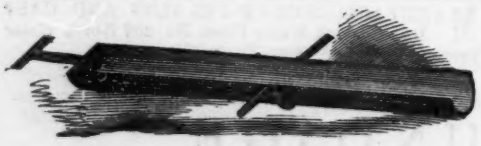
JOURNAL DE L'ECLAIRAGE AU GAZ is published on the 5th and 25th of each month, at No. 24 Boulevard Poissonière, Paris. American subscriptions can be made at the Office of the American Gas-Light Journal, New York.

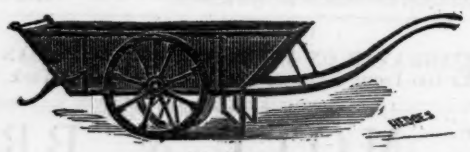
GAS COAL.—PENN COAL CO.

THE PENN COAL COMPANY HAVING COMpleted arrangements for mining and shipping Coal on an extensive scale, are now prepared to receive orders. The mines are favorably located on the line of the Pennsylvania Railroad, 26 miles east of Pittsburgh, Pa. The coal has been tested by many gas works, and the highest testimonials will be furnished. Communications addressed to the A. L. Massey, Philadelphia, will have immediate attention.



THE ABOVE CUT REPRESENTS MACKENZIE'S PATENT GAS EXHAUSTER (Force Blast).
It is offered to Gas Companies as a most perfect Machine. They are made of various sizes, capable of exhausting from 5,000 to 150,000 cubic feet per hour.
They require less power, work smoothly, are not so liable to get out of order, and cost much less than the imported ones.
Gas companies intending to use an exhauster, by stating the quantity of gas they may wish to have pass through per hour, will be furnished with a statement of the proper size, and the price of the same, on application to ADDISON SMITH, Manufacturer, New Haven, Conn., or to Messrs. ELLIMAN BROTHERS New York.
The manufacturer has the liberty to refer to the Albany Gas-Light Co., N. Y., where one has been in constant operation for many months. Another one, capable of exhausting from 50,000 to 70,000 cubic feet per hour, will be in operation in a few weeks, at the St. Louis (Mo.) Gas-Works.


Coal-Scoop for filling Retorts.

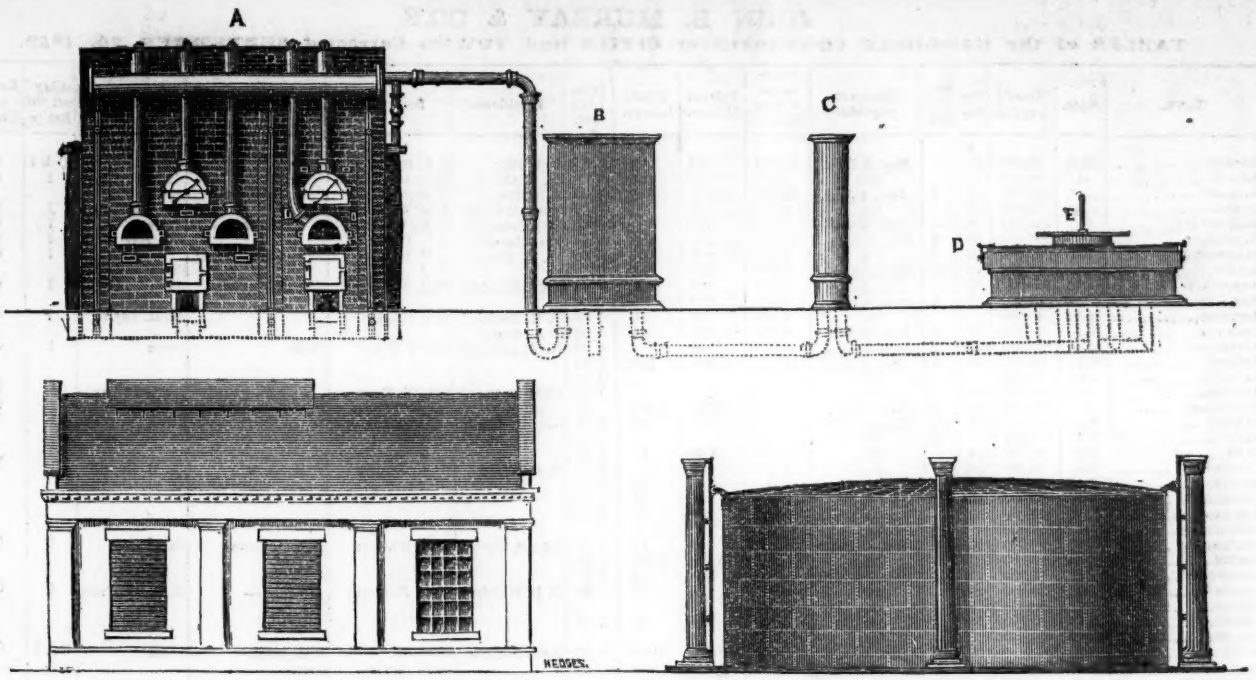

Coke-Barrow.

McKINNY & KELLY,

MANUFACTURERS OF

COAL-SCOOPS AND COKE-BARROWS FOR GAS-WORKS,

Furman Street, near Fulton Ferry, Brooklyn, N.Y.



SABBATON BROTHERS,

GAS ENGINEERS AND CONTRACTORS,

ALBANY, NEW YORK,

ARE prepared to furnish Plans and Specifications for GAS-WORKS OF ANY DESIRED CAPACITY, and will enter into Contracts for erecting the same in Towns, Villages, and Cities.

The experience of many years, devoted exclusively to the erection of apparatus for generating artificial light, has enabled them gradually to simplify the arrangement of Machinery, and greatly to reduce the COST OF CONSTRUCTION.

These improvements are not the subject of Letters-Patent, nor is any attempt made to mystify a simple operation, which, when conducted in a proper manner, renders the work of supplying a pure illuminating gas a matter of the easiest attainment.

The subscribers also desire to call the attention of those interested to their lately-designed APPARATUS FOR LIGHTING HOTELS, PUBLIC EDIFICES, AND PRIVATE DWELLINGS.

In it they have combined the simplest and most perfect Machinery for producing an illuminating gas, whether the material used be Coal, Rosin, or other like substances.

The principal objects attained in manufacturing gas by our apparatus are,—

The generation of a pure gas at the lowest possible figure;

The accessibility of every part of the machinery, owing to its simplicity and compactness, and the entire freedom from accident or danger in the manufacture of gas.

The above wood-cut represents an elevation of a building and apparatus designed for supplying Coal-gas to small villages.

The apparatus, such as the Condenser, B, Washer, C, and Purifiers, D, are similar to those designed for public buildings, factories, and hotels.

The Works erected by the subscribers, on their plan, HAVE NEVER FAILED TO PRODUCE THE MOST SATISFACTORY RESULTS; and they risk nothing in saying, that by no other method (patent or otherwise) can a pure illuminating gas be furnished at a less cost.

All communications addressed to the subscribers will meet with prompt attention. Orders may also be addressed to Messrs. HERRING & FLOYD, OREGON FOUNDRY, NEW YORK, who have furnished the Machinery, after our plans, for a number of Hotels.

The subscribers refer to Gas Companies in several cities and villages in the United States, for whom they have erected Gas-works.

JOHN B. MURRAY & CO.'S

TABLES of the GAS-LIGHT COMPANIES of CITIES and TOWNS, Corrected SEPTEMBER 30, 1859.

No.	Chartered.	Town.	State.	Chart'd Capital.	Per Sh.	Sem An'l Div.	Dividends payable.	Population of Gas District.	Private Meters.	Public Lamps.	Price 1,000 feet.	President.	Secretary.	Engineer.	Superintd't.	Clay orIron Ret'ts.	Rosin or Coal.	Wet or Dry Lime.	Cement or Lead Joints.
					$														
1	1857	Adrian	Mich.	50,000	50		May & Nov.	12,200	275	30	3 50	B. Barker	S. B. Barker	Same	Same	C & I	C	W L	C
2	1856	Akron	O.	20,000	33⅓		Do.	3,500	120	22	3 00	H. S. Abbey	Thos. H. Godwin	Same	Same	I	C	W L	C
3	1845	Albany	N.Y.	250,000	20	4	Jan. & July	65,000	8,200	510	3 00	J. Rathbone	R. Merrifield	P. A. Sabbaton	Same				
4	1853	Albion	N.Y.	30,000	100		Do.	3,000	136	—	3 50	Roswell Clark	Arad Thomas		V. V. Bullock	I	C	W L	L
5	1851	Alexandria	Va.	105,530	—	—	City works.	9,000	790	105	3 50	City Council	T. M. White	T. W. Smith	Same	I	C	D L	L
6	1852	Alleghany	Pa.	200,000	25	4	May & Nov.	25,000	900	200	3 00	Jas. Marshall	J. C. Porter		Jas. Ray	I	C	D L	C
7	1853	Allentown	Pa.	60,000	100	3½	Do.	5,000	300	30	3 50	W. H. Blumer	J. M. Line	N. Landenschlager		I	C	W L	L
8	1857	Alton	Ill.	75,000	—	—	Private works.	4,000	250	67	3 50				Same				
9	1858	Annapolis	Md.	100,000	25		Jan. & July	4,000	120	64	4 00	Alex. Randall	Nich. H. Green	Geo. N. Taylor	Same	I	C	D L	L
10	1858	Ann Arbor	Mich.	23,000	50	5	Mar. & Sept.	5,500	180	25	4 00								
11	1858	Astoria	N.Y.	20,000			Do.	6,000	96	17	4 00	C. R. Trafford	S. A. Halsey		W. H. Taylor	I	C	W L	L
12	1855	Atlanta	Geo.	50,000	25	5	Jan. & July	12,000	200	81	5 00	S. A. Dugas							
13	1855	Attleboro'	Mass.	50,000	100	3	June & Dec.	6,000	151		4 00	H. M. Richards	Henry Rice	Same	Same	I	C	D L	C
14	1850	Auburn	N.Y.	60,000	50	5	Jan. & July	12,000	400	120	7 00								
15		Augusta	Geo.	75,000			Do.				6 00								
16	1858	Augusta	Me.	150,000	50		Do.	10,000	287		4 00	Rich. D. Rice	Jas. W. North	——	David C. Lewis	I	C	W L	C
17	1817	Baltimore	Md.	550,000	100	5	June & Dec.	100,000	8,300	1,820	2 50	C. O'Donnell	Joseph Brown	J. M. Saunders	R. A. Holmes	I	C	W L	C
18	1852	Bangor	Me.	120,000	100	4	Jan. & July	12,000	760	22	3 50	Geo. K. Jewitt	Sol. Parsons	W. H. Perry	Same	I	C	D L	C
19		Batavia	N.Y.	100,000		4	Do.	150,000											
20	1858	Bath	Me.	68,000	100		Do.	10,000	280	18	3 75								
21	1858	Belfast	Me.	14,000	100		Do.	7,000	145	—	7 00	H. O. Alden	W. H. Conner	T. H. Shaw	W. H. Burrill	I	R	—	
22	1856	Bellefont	Pa.	20,000	25	2	Do.	3,500	105	18	4 00								
23	1854	Bethlehem	Pa.	23,000	50	3½	June & Dec.	2,000	207	29	3 80								
24	1858	Binghampton	N.Y.	50,000	50		May & Nov.	10,000	230	53	4 00								
25		Birmingham	Pa.	40,000			Do.												
26	1858	Bordentown	N.J.	50,000	25	3	June & Dec.	4,000	114	16	3 80	John S. Curtis	J. H. Wheeler	E. A. Hudson	Same	I	C	D L	L
27	1822	Boston	Mass.	1,000,000	500	5	Do.	200,000	10,410	2,265	2 50								
28	1851	Bridgeport	Ct.	75,000	25	4	Jan. & July	10,000	500	58	4 00								
29	1857	Bridgeton	N.J.	50,000	20		Do.	5,000	178	16	4 00	U. D. Woodruff	Chas. E. Elmer	——	U. D. Woodruff	I	C	D L	L
30	1856	Bristol	Pa.	20,000	25		Do.	2,000											
31	1855	Bristol	R.I.	85,000	50	2	Do.	6,000	120	24	4 00								
32		Brookline	Mass.	150,000			Do.												
33	1825	Brooklyn	N.Y.	2,000,000	25	5	Jan. & July	150,000	10,000	2,600	3 00	Robt. Nichols	F. Howe	J. K. Brick	Same	C & I	C	D L	L
34	1848	Buffalo	N.Y.	600,000	50	5	Do.	70,000	3,800	2,000	3 00		O. G. Steele	Same					
35		Burlington	N.J.	25,000															
36	1858	Burlington	Vt.	75,000	25		Do.	10,000	220		4 50								
37	1852	Cambridge	Mass.	200,000	100	4	Feb. & Aug.	20,000	1,294	257	3 50								
38	1852	Camden	N.J.	100,000	100	3	April & Oct.	10,500	700	140	3 50				O. W. Goodwin				
39	1853	Canandaigua	N.Y.	50,000	50		Jan. & July	7,000	190	21	4 00								
40		Canton	O.	20,000			Do.												
41	1858	Cape Island	N.J.	80,000	100	3	October	10,000	80	20	6 00	P. P. Delby							
42	1855	Carlisle	Pa.	80,000	25		Jan. & July	4,000											
43	1856	Catasauqua	Pa.	15,000	25	5	May & Nov.	1,000	103	21	4 00	Joshua Hunt	Jno. Williams	Joshua Hunt	Same	I	L	D L	C
44	1858	Catskill	N.Y.	10,000	—	—	Private works	3,000	134	20	4 00								
45	1857	Chambersburg	Pa.	30,000	25		Jan. & July	8,000											
46	1846	Charleston	S.C.	723,800	25	4	Do.				4 00	J. Schnierle	J. R. Heriot						
47	1851	Charlestown	Mass.	150,000	50	4	Do.	25,000	1,150	210	3 50	P. Hubbell	G. B. Neal		R. Coyle	I	L	W L	C
48	1858	Charlotte	N.C.	14,000	50	6	Mar. & Sept.	3,500	120	80	6 00								
49		Charlottesville	Vt.	15,000															
50	1851	Chelsea	Mass.	100,000	100	3½	Jan. & July	8,000	430	126	3 50								
51	1856	Chester	Pa.	80,000				3,000							John Andrews				
52	1849	Chicago	Ill.	1,300,000	25	5	Jan. & July		4,265	1,100	2 50	Hugh T. Dickey	Jas. K. Burtis	——	Peter T. Burtis	C & I	C	W L	L
53	1851	Chillicothe	O.	40,000	25	4	Do.	12,000	290	88	3 50		J. W. Graham						
54	1842	Cincinnati	O.	1,000,000	100	5	Do.	225,000	6,000	1,700	2 50	J. H. Caldwell	W. L. Clarke	Jno. Jeffrey	——	I	C		
55		Clarksville	Tenn.	100,000															
56	1836	Cleveland	O.	100,000	100	5	Do.	6,000	2,000	350	3 00	J. P. Handy	T. Dwight Eels		Thos. Hoadley	Same	C & I	C	W L	L
57	1854	Cohoes	N.Y.	50,000	20	3½	April	5,000			3 60								
58	1852	Columbia	Pa.	37,500	25	—	Jan. & July	4,000	250	22	3 50	J. G. Hess	Alex. Caldwell		S. A. D. Nager	Same	I	C	W L	L
59	1852	Columbia	S.C.	44,000	25	4	Do.	6,000	400	55	6 00	G. E. Walker						R	
60	1858	Columbus	Ga.	54,175	25	5	Do.	8,000	246	77	7 00							R	
61	1850	Columbus	O.	100,000	10	—	Do.	30,000	800	174	3 00								
62	1858	Concord	N.H.	50,000	50	4	Do.	12,000	400	88	3 50	Nath. White							
63	1858	Covington & Newport	Ky.	100,000	50	3½	Do.	28,000	544	143	4 00	Jno. Jeffrey	C. T. Martin	J. Jeffrey	——	I	L	W L	C
64	1854	Cumberland	Md.	60,000	50	3	Do.	6,000	230	36	4 00	——	——	——	John M. Hill	I	C	W L	C
65	1857	Danbury	Ct.	50,000	25	4	Do.	2,000	120		4 00	H. Benedict	Henry Williams	——	Henry Benedict	I	C	D L	
66	1856	Danville	Pa.	3,000			Do.												
67	1855	Davenport	Iowa.	56,000	100	—	Do.	6,000	350	256		G. L. Davenport	J. Dermody	——	F. Dermody	I	L	D L	C
68	1848	Dayton	O.	50,000	25	4	Aug.	25,000	575	165	4 00				H. W. Richards	C & I			
69	1858	Dedham	Mass.	40,000	50		Jan. & July	6,000	112		4 00								
70	1949	Detroit	Mich.	500,000	50	5	Do.	80,000	1,000	491	3 50	Alex. H. Dey	P. E. Demill	Same	Same		C	W L	L
71	1857	Dorchester	Mass.	110,000	100		Do.	12,000	210	50	4 00								
72	1859	Dover	Del.	25 000			Do.	2,000											
73		Doylestown	Pa.	50,000			Do.												
74		Dubuque	Iowa.	100,000	50	—	Do.	17,000	500	126	4 50	C. H. Booth	J. C. Higginsen	Saml. Ross	Same	I	C R	W L	L
75	1853	East Boston	Mass.	138,000	25	4	Do.	20,000	475	270	3 50								
76	1853	East Greenwich	R.I.	11,200	100	15	Do.	3,000	100		7 00								
77	1850	Easton	Pa.	125,000	50	4	June & Dec.	6,000	657	76	3 60								
78	1856	Eastport	Me.	31,669	55		Do.	5,000	185	15	4 00								
79	1855	Elizabeth	N.J.	100,000	20	3½	Jan. & July	3,500	250	40	3 80								
80	1852	Elmira	N.Y.	50,000	25	3½	Do.	10,000			4 00								
81	1852	Erie	Pa.	68,000	50	3½	June & Dec.	10,000	300	80	3 00					I			
82	1838	Evansville	Ind.	60,000	50	4	Jan. & July		806	90		C. G. Keats	J. J. Chandler	C. G. Keats	Same		C	W L	
83	1847	Fall River	Mass.	26,000	—	—	Private works.	12,000	400	60	3 50								
84	1859	Fayetteville	N.C.	25,000	100	6	Jan. & July	7,000			6 00								
85	1857	Fishkill	N.Y.	10,000	20		Do.	1,500	50	9	6 00								
86	1853	Fitchburg	Mass.	45,000	50	3	Do.	7,000	180	34	4 00								
87	1855	Flushing	N.Y.	41,000	50	1½	Mar. & Sept.	6,500	184	18	4 00				H. F. Coggeshall				
88	1851	Frankfort	Ky.	30,000	—	—	City Works	5,500	140	79	4 50								
89	1851	Frederick City	Md.	36,000	100	—	Jan. & July	5,000	250	32	6 70	Chas. E. Trail	Same	——	——	I	R		L
90	1854	Fredericksburg	Va.	72,500	50	5	Do.	4,500	230	—	4 00	Alex. K. Phillips	Jos. D. Hunt	——	Thos. Griffin	I	C	D L	L
91	1858	Fredonia	N.Y.	10,000	100	—	Do.	2,000	43	8	4 00	Elias Forbes	Preston Barmore	Same	Same	—	—	—	L
92	1858	Fulton	N.Y.	12,000	100		Do.	2,500	120	7	7 00				N. B. Rice				
93	1855	Galena	Ill.	80,000	50		Do.	8,000	236	60	4 00								
94	1858	Galveston	Texas.	120,000	50		Do.	7,000	150		6 00								
95	1853	Geneva	N.Y.	75,000	25	3½	Do.	6,000	250	84	4 00	L. W. Lacey	W. F. Curry	Same	Same	I	C	W L	L
96	1854	Glenn's Falls	N.Y.	35,000	50	3	Feb. & Aug.	4,000	161	18	4 00								
97	1854	Gloucester	Mass.	40,000	50		Jan. & July				3 50								
98	1855	Great Barrington	Mass.	5,000	100		Apr. & Oct.	4,000	58	4	7 00						R		
99	1859	Greensburg	Pa.	30,000	25		Do.	3,000											
100	1854	Hagerstown	Md	15,000	10		Jan. & July		125		7 50								
101		Hallowell	Me.	40,000			Do.												
102	1857	Harlem (N.Y. City)	N.Y.	350,000	50	3½	Do.	25,000	700	1,800	3 50	Burr Wakeman	H. P. McGown	Sam. R. Brick	Jacob M. Long	I	L	W L	
103	1855	Harrisburg	Pa.	100,000			Do.												
104	1849	Hartford	Ct.	175,000	25	4	Do.	25,000	1,700	210	3 50								
105		Haverstraw	N.Y.	15,000			Do.		100										
106	1856	Hollidaysburg	Pa.	30,000	25	3	Do.	4,000	200	10	3 50	J. A. Landis							
107	1854	Honesdale	Pa.	30,000	25	3	Do.	3,500	180	35	4 00	R. F. Lord	F. B. Penniman	——	J. K. Sutton	I	L	W L	L
108	1859	Hudson	N.Y.	50,000	100	3½	Feb. & Aug.		260	64	4 00	Oliver Bronson	J. W. Fairfield		Same				
109	1857	Huntingdon	Pa.	18,000	50	3	Do.	2,000	107	9	3 50	W. Dorris, jr.	J. Simpson Africa	——	U. B. Lewis	I	C	W L	L
110	1856	Huntsville	Ala.	7,825	25		June & Dec.	2,000		100	5 00								
111		Indianopolis	Ind.	150,000															
112	1857	Iowa City	Iowa.	40,000	50		Feb. & Aug.	4,000			4 50								
113	1852	Ithica	N.Y.	75,000	25	3½	Jan. & July	6,000	212	26	4 00								
114	1857	Jackson	Mich.	25,000	50		Do.	6,000	125	20	3 50	P. B. Loomis	E. Pringle	E. A. Coen	——	C & I	C	D L	L
115	1858	Jacksonville	Ill.	25,000	50		Do.	7,000	150	25									
116	1856	Jamaica	N.Y.	20,000	25	4	Do.	6,000	180	20	4 00		J. G. Lamberson						
117		Jamaica Plains	Mass.	50,000			Do.												
118	1856	Janesville	Wis.	50,000	100		Do.	12,000	200	40	4 00								
119	1838	Jersey Cy. & Hoboken	N.J.	300,000	20	5	Do.	30,000	1,900	212	3 00								
120	1856	Johnstown	Pa.	80,000	25	3	Do.	8,000	300	—	3 00	John Lowman	F. W. Hay	——	——	I	C	W L	L
121	1858	Kalamazoo	Mich.	30,000	100		Do.	10,000			4 00								
122	1848	Kensington	Pa.	100,000	10	5	Feb. & Aug.	60,000	2,800	400	2 50	John Landell	Peter Rambo						L
123	1855	Keokuk	Iowa.	100,000	100		Jan. & July	10,000	350	120	3 50	Ed. Kilbourn	E. K. Buell	——	——	C & I	C	D L	
124	1855	Kingston	Pa.	50,000	50		Do.	3,000	240	30	4 00								
125	1854	Knoxville	Tenn.	63,000	50		April & Oct.	4,000	128	40	5 00								
126	1854	Lafayette	Ind.	60,000	50	3	Jan. & July	8,000	250	60	3 25								
127		Lambertsville	N.Y.	25,000			Do.								Chas. Collins	I			
128	1849	Lancaster	Pa.	100,000	25	4	Do.	10,000	620	100	3 00	C. Hager	Jas. L. Reynolds	Geo. K. Reed	Hugh Corcoran		L	D L	L
129	1856	Lancaster	O.	25,000	50		Do.	5,000	140	28	3 50								
130		Lansingburg	N.Y.	25,000	—	—	Private works.	7,000			4 00								
131	1849	Lawrence	Mass.	120,000	100	5	Feb. & Aug.	15,000	745	68	3 50								

JOHN B. MURRAY & CO.'S

TABLES of the GAS-LIGHT COMPANIES of CITIES and TOWNS, Corrected September 30, 1859.

No.	Chartered.	Town.	State.	Chart'd Capital.	Per Sh.	Sem An'l Div.	Dividends payable.	Population of Gas District.	Private Meters.	Public Lamps.	Price 1,000 feet.	President.	Secretary.	Engineer.	Superintd't.	Clay or Iron Ret'ts.	Rosin or Coal.	Wet or Dry Lime.	Cement or Lead Joints.
					$														
132	1859	Leavenworth.....*	Kans.	200,000	100		Jan. & July												
133	1856	Lebanon.....	Pa.	26,000	25		Feb. & Aug.	5,000	225	35	4 00	A. Weidell							
134	1858	Lewisburg.....	Pa.	20,000	50		Jan. & July	4,000	100		4 00	Eli Sliper							
135		Lewiston.....	Me.	100,000	100	3	Do.	10,000	300	104	4 00								
136	1856	Lewistown.....	Pa.	30,000	20	3	April & Oct.	3,000	160	18	3 10	E. L. Benedict	Jno. W. Shaw	Joseph Gray	Same	I	C	D L	C
137	1853	Lexington.....	Ky.	100,000	50	4	Jan. & July	5,000	306	104	4 00	Alex. Jeffrey	Thos. Lewinski	A. Jeffrey	Same	—	C	D L	C
138	1856	Little Falls.....*	N.Y.	40,000	25		Do.	6,000											
139	1858	Lockhaven.....	Pa.	28,000	25		Do.	3,000	140	24	4 00	G. W. Mears							
140	1888	Louisville..	Ky.	600,000	50	6	Do.	80,000	2,866	951	2 70	R.G.Courtenay	J. S. Cain	R. G. Courtenay	Thos. Rankin	I	C	W L	C
141	1849	Lowell.....	Mass.	200,000	100	5	Do.	50,000	2,290	220	3 25								
142	1852	Lynchburg.....	Va.	70,000	25	5	Do.	6,000	330	50	3 80	J. R. McDaniel	D. E. Spencer.	——	Jas. Cleland	I	C	W L	C
143	1852	Lynn.....	Mass.	55,000	100	4	Do.	20,000	400		4 00								
144	1859	Lyons.....*	N.Y.	20,000	50		Do.	8,000											
145	1852	Macon.....	Geo.	75,000	25	6	Do.	5,000	254	105	5 00								
146	1851	Madison.....	Ind.	160,000	25	3	Do.	10,000	303	95	3 50	A. Todd	Jas. Siddell	——	A. Todd	I	C	W L	C
147	1855	Madison.....	Wis.	100,000	25		Do.	5,000	220	70	6 00								
148	1854	Malden & Melrose..	Mass.	50,000	100	3	Feb. & Aug.	5,000	180	25	4 00								
149	1852	Manayunk.....*	Pa.	40,000	25		Do.	7,000											
150	1859	Manchester.....	N.H.	125,000	100	5	Jan. & July	25,000	800	125	3 00	E. A. Straw	H. Foster	J. T. P. Hunt	Same	I	C	W L	C
151	1830	Manhattan (N.Y.Cy.)	N.Y.	4,000,000	50	5	Do.	600,000	26,000	9,000	2 50	Chas. Roome	Sam. H. Howard	Jos. A. Sabbaton	†See end Table	C	C	W L	L
152		Mansfield.....*	O.	25,000	30		Do.												
153		Mauch Chunk.....*	Pa.	50,000	25		Do.												
154	1857	Marietta.....	O.	30,000	50		Do.	6,000	125	7	4 00								
155	1857	Massilon.....	O.	20,000	25		Do.	5,000	120		3 00								
156	1855	Meadville.....	Pa.	30,000	25		Do.	3,000	150	90	3 50								
157		Medina.....	N.Y.	2,000	20		Do.	2,000	30		7 00	Wm. Bent				I	R	—	L
158		Memphis.....*	Tenn.	50,000	50		Do.												
159	1853	Middletown.....	Ct.	50,000	25	3	Mar. & Sept.	5,000	250	30	4 00	B. Douglas	W. Woodward	Isaac Battin	Same	I	C	W L	C
160	1852	Milwaukie.....	Wis.	400,000	50	5	Jan. & July	24,000	1,300	284	3 50	E. Cramer	E. Irons	——	W. Hayden	I	C	W L	C
161	1836	Mobile.....	Ala.	200,000	50		Do.	30,000	850	200	4 50								
162	1852	Montgomery.....	Ala.	100,000	100	4	Feb. & Aug.	7,000	300	77	6 00	Smith Cullom	John W. Durr	Stephen Bates		—	R	—	
163	1859	Morrisania.....*	N.Y.	30,000	25		Feb. & Aug.												
164	1859	Morristown.....*	N.J.	40,000	50		Do.												
165	1854	Mount Holly.....	N.J.	16,650	50	3	April & Oct.	2,000	140		7 00	A. R. Shreve	C. H. Hollinshead	Same	Same	I	R	—	L
166		Mount Vernon.....*	O.	50,000	25		Do.												
167	1857	Muscatine.....	Iowa.	50,000	100	—	Jan. & July	3,000	150	60	4 50	Chester Weed	E. Klein	——	E. Hobert	I	C	D L	L
168	1854	Nantucket.....	Mass.	50,000	100	3	Feb. & Aug.	6,000	275	65	4 00	Geo. W. Macy	And. J. Morton	——	G. Munroe, jr.	I	C	D L	L
169		Nashua.....	N.H.	45,000	60		Jan. & July.	10,000	250	46	3 50								
170	1850	Nashville.....	Tenn.	140,000	50	6	Do.	11,000	700	200	4 00								
171	1858	Natchez.....	Miss.	46,000	100		Do.	8,000	200	90	5 00	G. W. Koontz							
172	1852	New Albany.....	Ind.	200,000	50	3½	Do.	16,000	250	73	3 50	J. M. Hains	Walter Mann	J. M. Hains	Same	I	C	W L	C
173	1846	Newark.....	N.J.	300,000	50	4½	Do.	45,000	2,400	458	3 50								
174	1856	Newark.....	O.	30,000	100		Do.	7,000	135	30	3 50								
175	1852	New Bedford.....	Mass.	130,000	100	5	Do.	15,000	1,125	304	3 25	W. C. Taber	W. T. Howland	——	J. T. Duff	I	C	W L	L
176		New Britain.....*	Ct.	50,000	50		Do.												
177	1851	New Brunswick.....	N.J.	100,000	20	4	Do.	8,000	460	76	3 80	David Bishop	John G. Hall	Same	Same	I	C	D L	L
178	1852	Newburg.....	N.Y.	67,000	20	3½	Do.	15,000	600	55	4 00								
179	1857	Newcastle.....	Del.	22,300	10	3	Do.	4,000	112	19	4 00								
180	1847	New Haven.....	Ct.	200,000	25	4	Do.	30 000	2,004	241	4 00	W W Boardman	John S. Graves	Same	Thos. M. Cox	I	C	D L	L
181	1853	New London.....	Ct.	70,000	50	3	Do.	12,000	300	—	4 00	A. C. Lippitt	J. N. Harris	Alex. Merrell	Same	I	C	D L	L
182	1835	New Orleans.....	La.	1,500,000	100	6	Do.	120,000	5,000	2,000	4 50								
183	1853	Newport.....	R.I.	130,200	100	4	Do.	10,000	500	119	3 50	Henry Bull	Jno. H. Cozzens	J. N. Stanley	Same	C & I	C	D L	L
184	1854	Newton&Watertown	Mass.	300,000	100	2	Do.	10,000	270	52	3 80	J. N. Bacon	B. F. Bacon	H. K. Symmes	Same	I	C	W L	C
185	1928	New York.....	N.Y.	1,000,000	50	5	May & Nov.	100,000	13,000	3,150	2 50	W. W. Fox	C. L. Everitt	——	John Mowton	C	C	W L	L
186	1859	Niagara Falls.....*	N.Y.	100,000	25		Do.												
187	1853	Norristown.....	Pa.	41,700	25	3	June & Dec.		350	50	3 75								
188		Northern Liberties.	Pa.	400,000	25	7½	Mar. & Sept.				2 50								
189	1856	Northampton.....	Mass.	35,000	25		Do.	4,500	140	30	4 00								
190	1856	Norwalk.....	Ct.	30,000	25	4	Feb. & Aug.	6,000	205	8	4 00	C. B. White	W. C. Street	——	M. M. Norton	I	C	W L	Rust
191	1859	Norwalk.....	O.	30,000	50		Jan. & July	4,000	100	28	4 00	C. L. Bolt	G. H. Safford	E. A. Coen	H. Harlin	C	C	W L	L
192	1854	Norwich.....	Ct.	75,000	25	3½	Do.	12 000	500	100	3 50	John Dunham	Jno. L. Devotion	B. M. Douglas	Same	I	C	D L	C
193	1859	Nyack.....	N.Y.	20,000	50		Do.	2,500											
194	1855	Ogdensburg.....	N.Y.	75,000	50		Do.	9,000	250	52	4 00								
195	1852	Oswego.....	N.Y.	81,250	25	3½	Do.	15,000			3 80								
196	1855	Ottawa.....	Ill.	45,000	100	6½	Do.	6,000	225	75	4 00	W.H. Cushman	Levi Mason	Same	Wm. Cogswell	C & I	C	D L	L
197	1856	Owego.....	N.Y.	40,000	50	3½	Do.	5,000	200	36	4 00	W. F. Warner	A. P. Storrs	——	——	C & I	C	D L	L
198	1845	Painsville.....	O.	200,000	100	5	May & Nov.												
199	1856	Palmyra.....	N.Y.	12,000	50		Jan. & July.	3,000	120	14	3 50	G. W. Cuyler	F. Williams	S. Jackson	Same	I	R	—	L
200		Paterson.....	N.J.	110,000	5	3	Do.	13,000	600	96	4 50								
201	1850	Pawtucket.....	R.I.	100,000	50	4	Do.	8,000	485	75	3 50	James Dennis	Isaac Shove	——	Henry Crowell	I	C	D L	C
202	1855	Peekskill.....	N.Y.	31,000	50	3	June & Dec.	4,000	190	37	4 00								
203	1859	People's, Chicago...	Ill.	500,000	100		Do.												
204	1855	Peoria.....	Ill.	90,000	50		Do.	8,000	340	140	3 50								
205	1852	Petersburg.....	Va.	120,000	25	5	Jan. & July	20,000	600	204	3 80	J. N. Nichols	Same	W. H. Baxter	Same	I	C	W L	C & L
206	1841	Philadelphia.....	Pa.	3,000,000	—	—	City Works.	650,000	32,000	5,000	2 25								
207	1855	Piqua.....	O.	50,000	50		Jan. & July	6,500	200	53	4 00	A. G. Conover	Wm. Y. Strong	O. Clapsaddle	——	I	C	W L	L
208	1885	Pittsburg.....	Pa.	300,000	50	5	Do.	60,000	2,624	517	1 50	Thos. Bakewell	George Black	James Thomson	Same	I	C	W L	C
209	1854	Pittsfield.....	Mass.	40,000	100		Do.	6,000	210		4 00								
210	1853	Plymouth.....	Mass.	40,000	100		April & Oct.	8,000	181	5	4 00								
211	1849	Portland.....	Me.	250,000	50	4	Jan. & July	30,000	1,900	247	3 50	Neal Dow	C. S. D. Griffin	Thos. Barker	Neal Dow	C & I	C	D L	L
212	1859	Portland.....*	Oreg.	50,000	50														
213	1851	Portsmouth.....	N.H.	60,000	100	3	April & Oct.	12,000	425	31	4 00								
214	1855	Portsmouth.....	O.	50,000	50	4	Jan. & July	10,000	400	63	3 50	JVRobinson jr.	J. W. Collins	——	T. H. Jones	I	C	D L	C
215	1855	Portsmouth.....	Va.	100,000	50	4	Do.	4,000	140	65	4 00	Chas A. Grice	Same	J. P. Kennedy	C. C. Grice	I	C	W L	L
216	1856	Pottstown.....	Pa.	20,000	25		Do.	8,500											
217	1850	Pottsville.....	Pa.	110,000	50	2	Do.	10,000	525	62	3 30	S. Silliman	D. E. Rice	M. Boone	Same	I	C	W L	L
218	1850	Poughkeepsie.....	N.Y.	70,000	25	4	Mar. & Sept.	15,000	625	64	4 00								
219	1848	Providence.....	R.I.	1,000,000	50	4	Jan. & July	60,000	4,200	864	3 00	Amos D. Smith	Edw. Walcott	Same	B. O'Neill	I	C	W L	C & L
220	1853	Quincy.....	Ill.	300,000	50	4	June & Dec.	18,000	409	217	3 50	S. W. Rogers	Same	C. C. Hopper	Same	I	C	W L	C
221	1855	Racine.....	Wis.	40,350	25		Do.	7,000	200	33	3 50								
222	1857	Rahway.....	N.J.	50,000	20		Jan. & July	5,000	165		4 00	J. R. Shotwell	E. Y. Rogers	P. Clark	Same	C & I	C	D L	C
223	1858	Raleigh.....	N.C.	25,000	100	6	May & Nov.	5,000	120	34	6 00	D. G. Fowle	W. E. Anderson	J. Waterhouse	D. G. Simpson	I	R	—	C
224	1848	Reading.....	Pa.	80,000	25	3	Jan. & July	20,000	700	40	3 00								
225	1852	Richmond.....	Va.	341,975	—	—	City Works.	30,000		755	3 80	N. B. Hill			T. H. Winne	I	C	W L	L
226	1848	Rochester.....	N.Y.	200,000	50	5	Jan. & July	50,000	2,100	450	3 00	Lewis Brooks	Levi A. Ward	Geo. W. Parsons	Same	C & I	C	W L	C
227	1854	Rockland.....	Me.	50,000	100		Do.	6,000	170	150	4 40								
228	1852	Rome.....	N.Y.	85,000	100	3½	Do.	10,000		20	4 00								
229	1854	Rondout & Kingston	N.Y.	65,000	20	3½	June & Dec.	3,000	375	36	4 00								
230	1854	Roxbury.....	Mass.	150,000	100	5	Jan. & July	20,000	1,100	360	3 50								
231		Saco.....	Me.	71,600	100	3½	April & Oct.		220	18	4 00								
232		Sacramento.....	Cal.	500,000	100		Do.												
233		Saint Albans.....*	Vt.	50,000	50		Do.												
234	1858	Saint Joseph.....	Mo.	45,000	100	5	Jan. & July	6,000	250	20	5 00								
235	1847	Saint Louis.....	Mo.	600,000	50		June & Dec.	90,000	4,000	1,550	3 50								
236	1857	Saint Paul.....	Min.	200,000	50	3	Jan. & July	10,000	150	154	6 00								
237	1856	Salem.....	N.J.	30,000	20	3	Do.	5,000	260	26	3 80								
238	1850	Salem & So. Danvers	Mass.	200,000	100	4	Feb. & Aug.	22,500	1,300	160	3 50	George Choate	R. Gardiner	Francis Drown	Same	I	C	W L	C
239		Salem.....	O.	40,000	20		Do.												
240	1859	Salisbury.....	N.C.	14,000	50	6	May & Nov.	3,500	70	50	6 00								
241	1854	Sandusky.....	O.	75,000	50		April & Oct.	9,000	300	70	3 00	S. B. Caldwell	Wm. Hudson	Same	Same	C & I	C	D L	C & L
242	1852	San Francisco.....	Cal.	1,000,000	100	6	Do.					J. O'Donohue	J. G. Eastland	——	W. W. Beggs	I	C	W L	L
243	1853	Saratoga Springs...	N.Y.	39,000	100		Jan. & July	6,000	267	20	3 60	L. H. Tupper	R. D. Bardwell	C. E. Durkee	Same	I	C	W L	L
244	1849	Savannah.....	Ga.	200,000	25	5	Do.	10,000	1,100	480	4 75	F. T. Willis	Wm. F. Holland	Jas. R. Smedberg	Wm. Howe	C & I	C	W L	L
245	1851	Schenectady.....	N.Y.	50,000	—	—	Private Works	11,000	400	160	4 00								
246	1853	Scranton.....	Pa.	100,000	25		Jan. & July	6,000	120		3 80	J. H. Scranton	Chas. Fuller	——	J. F. Hunt	I	C	D L	L
247	1857	Selma.....	Ala.	20,000	100		Do.	2,000	40	18	5 00								
248	1856	Seneca Falls.....	N.Y.	80,000	50	2	Do.	6,000	220	37	4 00								
249		Shreveport.....*	La.	40,000	25		Do.												
250		Sing Sing.....*	N.Y.	40,000	20		Do.								W. H. Barlow				
251		Somersworth.....*	Mass.	30,000	50		Do.												
252	1859	Southbridge.....	Mass.	5,000	25		Do.	4,000	100		6 00								
253		South Boston.....*	Mass.	200,000	50		Jan. & July		400	109	3 25								
254	1854	Springfield.....	Ill.	75,000	50		Do.	10,000	498	276	3 50	N. H. Ridgeley	Chas. Ridgely	——	Wm. Gwynne	I	C	W L	L
255	1848	Springfield.....	Mass.	100,000	500	5	Feb. & Aug.	10,000	700	90	4 00	J. D. Brewer	Theo. Stebbins	Geo. Dwight	Same	I	C	W L	C
256	1855	Stamford.....	Ct.	22,000	25	5	April & Oct.	7,000	140	55	4 00								
257	1857	Staten Island.....	N.Y.	150,000	50	5	Jan. & July	26,000	260		4 00								L
258	1859	Staunton.....	Va.	18,000	50	6	Do.	4,000	81	18	7 00	J. A. Waddell	Geo. E. Price	M. Bowes	R. V. Horton	I	C	Tar	
259	1848	Syracuse.....	N.Y.	125,000	25	5	Mar. & Sept.	25,000	1,200	260	3 30								
260		Tamaqua.....*	Pa.	40,000	25		Do.												
261	1859	Tarrytown & Irvt'n.	N.Y.	70,000	50		Jan. & July	8,000	200	100	4 00	N. B. Holmes	S. M. Raisbeck	Levi Dimmock	Same	I	C	D L	C
262	1853	Taunton.....	Mass.	60,000	50	3	Do.	12,000	245	44	4 00								

JOHN B. MURRAY & CO.'S

TABLES of the GAS-LIGHT COMPANIES of CITIES and TOWNS, Corrected September 30, 1859.

No.	Chartered.	Town.	State.	Capital.	Per Sh.	Sem An'l Div.	Dividends payable.	Population of Gas District.	Private Meters.	Public Lamps.	Price 1,000 feet.	President.	Secretary.	Engineer.	Superintd't.	Clay or Iron Ret'ts.	Rosin or Coal.	Wet or Dry Lime.	Cement or Lead Joints.
				$															
263		Terre Haute .....*	Ind.	42,000			Jan. & July												
264		Tiffin	O.	25,000			Do.												
265	1853	Toledo	O.	100,000	50	3	Do.	8,000	450	89	3 50	Geo. Spencer	John W. May	——	——	C & I	C	W L	C
266	1847	Trenton.....	N.J.	100,000	20	4	Do.	15,000	700	100	3 60	Imlah Moore	John S. Chambers	——	Saml. Mentz	I	C	D L	C
267	1848	Troy	N.Y.	200,000	100	4	June & Dec.	35,000	1,575	312	3 60		S. S. Danchy	Same	Same	I	C	D L	L
268	1849	Utica	N.Y.	80,000	100	4	April & Oct.	22,000	612	112	3 60	S. Southwick	A. Fish	Same	Same	I	C	D L	L
269		Vicksburg.....	Miss.	66,000	50		Mar. & Sept.	4,000	220	115	4 50								
270	1854	Warren.....	R.I.	50,000	50	—	Do.	3,000	115	23	3 50	T. G. Turner	W. P. Freeborn	——	S. S. Damon	I	C	D L	
271		Wakesburn.....*	Pa.	60,000			Do.	6,000	230	30	4 00								
272	1855	Washington	D.C.	500,000	20	5	Jan. & July	50,000	2,600	800	3 50	G. W. Riggs, jr.	Jos. F. Brown	Sam. R. Brick	Owen O'Hare	C & I	C	D L	C
273	1848	Washington .....*	Pa.	30,000		—	Do.	4,000											
274	1854	Waterbury.....	Ct.	100,000	25		Do.	6,000	225	36	4 00	C. B. Merriman	H. B. Field W. T. Seymour	Same	Same	I	C	D L	C
275	1852	Waterford.....	N.Y.	12,000	100		Do.	4,000	80										
276	1852	Watertown	N.Y.	20,000	25		Do.	10,000	260	36	7 00								
277		Watertown.....*	Wis.	25,000			Do.	5,000											
278		Wautoma.....	Wis.	30,000	100		Do.	3,000											
279		Waverly.....*	Miss.	20,000			Do.	4,000											
280	1852	Westchester	Pa.	100,000	25	2½	Feb. & Aug.	3,500	543	64	3 50	John Marshall	Geo. W. Pearce	R. M. Frame	Same	I	C	W L	C
281	1853	West Troy.....	N.Y.	100,000	50	3	Jan. & July	8,000	425		4 00								
282	1850	Wheeling.....	Va.	75,000	25	6	Do.	13,000	700	129	2 70	J. Hombrook	G. T. Single	——	J. C. Wiley	I	C	W L	C & L
283	1850	Williamsburg	N.Y.	337,500	50		Do.	60,000	1,700	681	3 50								
284	1857	Williamsport.....	Pa.	70,000	25	4	Do.	8,000	257	—	3 80	John K. Hays	T. Coryell	J. Dittmore	T. Coryell	I	C	W L	C
286	1856	Wilkesbarre	Pa.	50,000	50		Do.	4,000	450		3 80								
287	1853	Wilmington.....	N.C.	60,000	50	5	Do.	8,000	286	62	5 00								
288	1852	Wilmington.....	Del.	200,000	50	5	Feb. & Aug.	20,000	1,300	150	3 50	Stephen Bonsall	Jno. A. Duncan	——	T. J. Mahaffy	I	C	W L	C
289	1854	Winchester.....	Va.	36,000	50	2½	Mar.	5,000	195	40	4 00								
290	1856	Woodstock	Vt.	7,950	50	4	Jan. & July	4,000	79	1	6 00								
291	1853	Woonsocket	R.I.	82,500	100	5	Do.	4,000	200		3 50								
292		Wooston.. ....*	O.	30,000			Do.	6,000											
293	1849	Worcester	Mass.	120,000	100	5	Do.	15,000	980	128	3 50	Geo. T. Rice	Wm. Cross	Jas. B. Blake	Same	C & I	C	W L	C
294	1854	Yonkers.....	N.Y.	70,000	50		Do.	6,000	290		3 80								
295	1849	York.....	Pa.	40,000	50	3	June & Dec.	10,000	320	37	7 00	Alex. Small	W. S. Roland	——	J. T. Kuehn	I	C	D L	C
296	1858	Ypsilanti.....	Mich.	20,000	50		Feb. & Aug.	6,000	140	20	4 00								
297	1848	Zanesville.....	O.	55,000	25	4	Do.	10,000	320	77	3 50	Adam Peters	Thos. Halpin	——	A. J. Printz	C & I	C	D L	C

† Superintendents of Manhattan Gas-light Company's Stations:—Walter Roome, William Coombe, Charles Smith, Thomas Marsh.

GAS-LIGHT COMPANIES IN THE BRITISH PROVINCES.

													Manager.						
1		Brockville .....*	C.W.	$50,000				5,000					——	——					
2		Cobourg .....*	C.W.	40,000				4,500						——					
3		Dundas.....*	N.S.	30,000				6,000						——					
4	1848	Halifax.....	C.W.	200,000	50	3	May	30,000	1,274	161	3 00			——					
5	1848	Kingston.....	C.W.	20,000	100	5	Mar. & Aug.	12,000	400	106	3 50		John Kerr	——		I	C	W L	L
6	1853	London	C.E.	100,000	20	5	May	5,000	350	112	5 00	Wm. Barker	Edw. Glackmeyer	——					
7	1847	Montreal.....	C.W.	300,000	40	4	Mar. & Sept.	60,000	2,030	500	3 25	Thos. Molson	Geo. Robson	——	John McElroy	C & I	C	D L	L
8	1854	Ottawa	C.W.	40,000	20		Do.	5,000	300	50	4 50	H. J. Friel	Geo. Henbach	——	James Perry	I	C	W L	L
9	1847	Quebec.....	C.E.	200,000	200	4	Mar. & Aug.	60,000	1,217	365	3 00	Wm. Walker	W. A. Cary	——	P. Peebles	I	C	D L	L
10		Port Hope.....	C.W.	7,000				4,500						——					
11	1848	Saint Catherine ...*	N.B.	20,000				7,000						——					
12		Saint John.....	C.W.	160,000	80	4	June & Dec.	20,000	1,400	225	3 50		H. Britany	——					
13		Saint John.....*	N.F.	50,000				30,000						——					
14	1848	Toronto.....	C.W.	400,000	100	4	Feb. & Aug.	50,000	1,919	874	3 33⅓	R. Yates	H. Thompson	——	——	C & I	C	D L	L

CUBA GAS-LIGHT COMPANIES.

1	1844	Compania Espanola...	Hav.	1,250,000	500	7½	Jan. & July	750,000	5,587	1,715	5 00			J. F. Harrison					
2	1857	Compania Cubana....	Hav.	500,000	500	10	Do.				5 00								
3		Cardenas.....*		50,000				180,000	90		5 00								
4		Cienfugos.....*		50,000				25,000			5 00				John Goodwin				
5		Guanabacoa.....		50,000				40,000			2 00								
6		Matanzas.....*		50,000															
7		Regla.....*		50,000															
8		Saint Jago de Cuba.....*		50,000															
9		Trinidad de Cuba.....*		50,000															
10		Ville Clara.....*		50,000															

* Estimated.

OUR GAS-LIGHT TABLES.

What a perfect Journal we could have if all the gas-light companies would second our efforts to present full and accurate reports! We might content ourselves with a list of the mere names and capital of companies and there stop, saving hundreds of dollars to our own pockets. But we wish to impart all useful and proper information, and to do so from time to time as the business of companies varies by increase. We do not subject them to expense, for we always inclose a stamped envelope to convey their replies, and yet it is astonishing and not a little discouraging to observe their inattention. In some gas-light offices the Genius of Silence appears to reign supreme, while from others, and we are happy to say the great majority, we receive most courteous, prompt, and obliging responses. We beg the delinquents to see the blanks that gape opposite their names, and help us to fill them at once.

Our Tables on pages 52, 53, 54—still incomplete—include

297	American Companies, representing.....			$42,861,174
14	British-American	do.	do.	1,617,000
10	Cuban	do.	do.	2,150,000
Total, 321	Companies, with an aggregate capital of			$46,628,174

We discontinue publishing regularly the value of gas-light shares, but may do so at stated intervals.

SEWERAGE.

We invite communications on this most important branch of our text. The older cities of this confederacy, find there is something radically wrong in their system of drainage, and we look for some useful hints from those who have made it their study with recent improvements.

COLLECTIONS.

We beg to call the attention of merchants and manufacturers in Europe, as well as in this country, to the thoroughly organized Collection Department of our house. We collect through banks and bankers at every point in the United States, including California and the distant territories, the British provinces, Cuba, South America, Central America, Australia, and the more remote portions of the globe.

Coal Explosions.—The English papers report some serious explosions in collieries and on shipboard, which require notice in the American Gas-Light Journal. The first was the explosion of fire-damp in the Tredegar Colliery, which was not marked by any extraordinary circumstances beyond the indications it gave of the fiery nature of the coal-field in which it occurred. But the explosion which took place on board the ship *Lebanon*, under the coal-drops of Monkwearmouth, confirms the opinion usually entertained as to the dangerous nature of coal cargoes, and therefore of the necessity of insuring them. It is to be suspected that the loss of many of the ships sailing either from the English northern or from the South Wales ports may be accounted for by the occurrence of similar explosions; and that many a vessel has gone down at sea, without leaving any trace of its sad tale, in consequence of the accidental communication of fire to the gases given out by a coal cargo whilst the hatches were battened down during a storm. Sailors should be taught the natural laws affecting the goods entrusted to their care, and gas-makers would certainly do wisely to study the laws which regulate the evolution of the vapors from the raw article of their business. The policy of storing large quantities of coal must be materially influenced by the possibility of this evolution of vapor upon the illuminating quality of the gas. We have a mass of interesting facts to present relating to the coal-fields of the world and their local idiosyncrasies, which we will present when the pressure of our fundamental tables of gas and water companies are perfected.

EUROPEAN IMPROVEMENTS IN GAS-LIGHTING.

One of our scientific staff sailed for Europe a few days since, to return in November, who will, occasionally during his absence, inform us of the modern improvements in gas-lighting. He will also procure a list of the various gas-light companies on the Continent of Europe, together with statistics of their capital, the par value of shares, prices of gas, and other data, which will be published *in extenso* in the American Gas-Light Journal in due time. From the same source we may obtain a list of the foreign periodicals on gas-lighting—of which we now know but three, the London, Munich, and Paris journals—together with all desirable works of that department of chemistry.

It is our determination to place the American Gas-Light Journal in the front rank of such publications. Its aim will be, while promoting local interests and disseminating local information, to be acceptable to European readers by the general character of its leading columns; although our local news is not altogether uninteresting to our foreign friends—especially to those in Great Britain engaged in mining and manufacturing, from the fact that the increasing demand for gas apparatus, coal, &c., from the new works springing up everywhere among us, is sure to create a corresponding demand there for those products—still there is a species of current news that the general reader looks for, apart from those topics, and such we hope to convey.

TO NON-SUBSCRIBERS.

Non-subscribers who have received a specimen number of the American Gas-Light Journal, and who wish to receive it regularly, will please remit the subscription price, *three dollars*, for which they will receive it for one year, *postage pre-paid*. Specimen numbers will be sent to new applicants.

For the American Gas-Light Journal.

ON THE CAUSES OF THE VARIABLE ILLUMINATING POWER OF COAL GAS.

By Prof. Wm. E. A. Aikin, University of Maryland.

It is, I believe, an undeniable truth, that the consumers of gas, on both sides of the Atlantic, are liable to certain inexplicable variations in the amount of their gas-bills for corresponding quarters during different years. And it is maintained by the public, that the difference in the amount consumed, due to the operation of the ordinary and legitimate causes, as the greater or less number of lights in use, or the greater or less number of hours they are burning, will not account for the wide differences indicated by the record of the gas-meter. It is so clearly the true interest of the gas-companies to have the public satisfied that the discrepancy to which I refer, is an accidental result, and not the result of design, that I feel fully assured of their hearty co-operation, if needed, in any investigation as to the accidental causes of the difficulty, and the remedy, if any can be found. I coincide most cordially with a late writer, who justly remarks, that it cannot be supposed for a moment that the highly respectable directors of these companies would be knowingly guilty of defrauding their customers by supplying an impure or adulterated gas, or by using false measures. No expression of condemnation would be sufficiently strong against men who could so disgracefully conduct their business as to connive at the manufacture of a confessedly inferior article, thus necessitating the consumption of a larger bulk, or who would wink at the practice of overfilling their meters, with a knowledge that the effect would be to make the quantity registered, greater than the amount supplied. To show the disgraceful character of such frauds, is at the same time to show that their committal by men of high reputation and standing in society, is most improbable. My attention was directed to the possible deterioration of coal gas in illuminating power, by injudicious exposure to water, in consequence of an accidental observation many years since. A jar of coal gas that had been set aside on the shelf of the pneumatic trough in the laboratory, for experimental purposes, on one day, was not required until the following. Then, on examining its condition previous to use, its illuminating power was found so fully impaired, that it was at once thrown away as useless, and a fresh supply obtained. The apparent explanation, that possibly some thoughtless visitor had carelessly raised the jar and replaced it, allowing atmospheric air to become mingled with the gas, seemed very probable at the time, and the fact was neglected. But it was recalled to mind some eighteen months since, when the variable character of coal gas became a subject of public discussion. And upon repeating the experiment in the manner detailed in a paper originally read before the American Association for the Advancement of Science, and reprinted in the August number of the American Gas-Light Journal, I obtained certain results that satisfied me there needed no accidental admission of air to explain the feeble light in my first observation, but that the change was due to a great loss of the light-giving constituents of the gas which had been abstracted by the water. Here was, then, most obviously, one cause to explain the difficulty. That it is a good cause, cannot well be denied; that it is sufficient in itself, I have never maintained, and do not believe. My result simply sufficed to show a notorious depreciation in the illuminating power of coal-gas by a brief contact with water. And while it is self-evident that a limited quantity of water cannot deteriorate an unlimited quantity of gas, it is equally true that the injurious action of a limited quantity of water cannot be arrested unless all contact with the external air is cut off; and as this is practically impossible, the injurious action must go on indefinitely. The contact in the gasometer between the water and the gas, must contribute to its aggregate injury, to an extent dependent on the conditions of the contact and the length of time it is maintained. The precise amount of injury from this cause at this point, may not be easily determined with exactness, but that it helps to make up the aggregate, and that this aggregate is at times a very inconvenient quantity, seems undeniable. In considering this injurious action of water, it must be borne in mind that it is not merely in the gasometer that it is exerted—that may be the least important point—for the same action is inevitable wherever and whenever coal-gas is allowed contact with water. In those arrangements where the gas is washed, by passing it through water to remove certain impurities present, there is a necessary loss of some of the illuminating material. And as the amount of washing required depends upon the amount of impurities present, and as these are liable to vary, it might easily happen that a serious and unnecessary loss of illuminating power would follow any unnecessary contact with water where the washing happened to be too long continued. If the manufacturer depends upon the scrubber for the removal of these impurities, the danger of injury to the gas becomes alarmingly increased. The very nature of this arrangement favors the closest and most intimate contact between every particle of the gas and water continually renewed. With the volume of gas mechanically divided and subdivided almost infinitesmally, in contact with water, spread out in innumerable and inconceivably thin films, every thing would favor the most rapid action, and a slight inattention on the part of a workman might result in very great loss to the consumer. In connection with this, it is worthy of note, that while the sense of smell, or at most a slip of test paper, will suffice to indicate the offensive impurities of coal-gas, much more time and trouble is required to determine its light value by the photometer. If the gas supplied at any time is not as nearly as possible inodorous, a general outcry is immediately raised and continued until the nuisance is abated. But the complaint of deficient light comes only quarterly when the bills prove an unusual consumption without any apparent cause. An insufficient purification of the gas is at once betrayed; an unnecessary purification escapes all notice except by those who consult the photometer. This injurious action of water would seem to be one of the principal causes of the defective illuminating power of coal-gas, but it is obviously not the only cause. Coal-gas cannot be kept, even in close vessels, for any great length of time, without serious injury. The most familiar evidence of this would seem to be offered in the very feeble light we get at first when we attempt to kindle a gas-jet that has been long in disuse, and where the first gas that passes out is that which has been long confined in the gas-pipe. Sometimes the first that escapes, is almost incombustible, can hardly be kindled, and when it does burn, gives a pale blue flame, so like that of a mixture of gas and air that the common explanation of the appearance supposes air to have got in the pipe. But such admission of air seems difficult to admit in view of the fact that the gas-pipe is constantly full of gas under more or less pressure, and the effect would rather seem due to the injury that always follows (as observed in other instances) where coal gas has been kept too long. It is true that where all the fittings are not absolutely perfect, the action of endosmose might introduce air, but this would necessarily be simultaneous with a corresponding exosmose of the gas itself, and in all cases where the odor does not betray the escaping gas, the entrance of air from this cause seems unlikely.

If we had asked the question a few years ago whether it is possible to have air mingled with coal-gas, as supplied to the public, the answer might have been unhesitatingly, No. With the apparatus formerly employed in the manufacture, the accidental admission of air was hardly possible, since the gas being generated under pressure, and ever afterwards kept under pressure, any accidental leak, while it allowed the gas to pass out, would not be likely to permit much air to pass in. But the refinement of modern science has suggested the addition of an exhausting arrangement, so connected with the retorts in the gas-works, that the pressure under which the gas is generated, may be reduced to the minimum, in order to diminish correspondingly the danger of loss from leakage. Heretofore the only limit to the amount of exhaustion that could thus be safely employed, has had reference to the danger of introducing so much air that an explosive mixture might result. An approved writer says: "It would be dangerous to "remove all pressure from the retorts, as in case of any "accident, atmospheric air might be introduced in such "quantity as to form an explosive compound, from "which very serious mischief might result." But who does not see that this exhaustion apparatus, while it most effectually prevents loss by leakage at certain points, may be the accidental means of introducing air enough to diminish the illuminating power of the gas, and yet not enough to incur the slightest risk of explosion. In this, as in every other step in the process of making gas, the security is for the manufacturer, the uncertainty is for the public. The engineer of one of the London gas-works, seems to understand the peculiar value of the exhauster. He states that in the use of clay retorts that are always liable to crack from the commencement, he employs an exhausting machine, so that no pressure at all takes place. A crack in a clay retort, would not stop the works; even if a piece of retort falls out, it can be mended. The failure of the exhauster would be more liable than any thing he knows of, to stop the works. The engineer of another company states, as his practice, that when the cracks in his clay retorts enlarge to a certain size, he is obliged to fill them up with clay, or, if that cannot be done, he bricks up the whole retort beyond the cracks; he never allows more than fifteen to twenty minutes for the purpose of repairing these cracks before charging the retorts Add to all this the admitted fact that the use of clay retorts is daily becoming more and more general and it will be obvious that if at the present day we ask whether it is possible for air to become mingled with coal-gas before it is distributed, the answer must be, Yes, very possible. And it is equally obvious that the admission or exclusion of air would depend entirely upon the carelessness or the watchfulness of a workman. Again, the possibility of such accidental admission of air, and its effect on the illuminating power of the gas, is clearly shadowed forth in the remarks of the editor of the English *Journal of Gas-Lighting* in his attempt to account for the strange results obtained by Mr. T. A. Hedley, in that gentleman's examination of the gas supplied to the town of Luton, in October last. The illuminating power of the gas at the works, was fourteen candles; but in the town of Luton, only a few hundred yards distant, for two successive days it gave the light of only eight candles A few weeks afterwards the gas from the same works, examined in the same town, gave the light of fifteen candles. Admitting all Mr. Hedley's facts, we may yet discard all his ungenerous suspicions, and explain his results as suggested in the editorial to which I refer, by supposing the accidental admixture of air with the gas at one time, and its freedom from such admixture at another, or, what seems to me less likely, the unsuspected presence of carbonic acid at one time, might have impaired the light. The editor censures Mr. Hedley for not having instituted "inquiries whether any exhausting apparatus was in "use by which atmospheric air could have been drawn "in, or whether carbonic acid gas might not have been "pressed in excess," before coming to any conclusion, expressed or implied, in the premises; and very properly adds, that "gas engineers and managers of gas-"works have characters to lose, and the humblest of "them ought not to be branded with dishonesty, ex-"cept upon the clearest evidence." These must be the sentiments of every honest mind, and if, in the past, any careless expression may have escaped me, that could possibly bear any improper interpretation, I can only express my regret, and emphatically disclaim, for the past as for the present, all intention of imputing anything of fraud or dishonesty to the parties engaged in the management of our various-gas works. But if it can be shown that the manufacture of coal-gas, of proper quality, is necessarily embarrassed with so many, and such difficulties, that the utmost watchfulness is required on the part of every one concerned, from the president of the company to the stoker in the retort-house, and the laborer at the tarrow; if it can be shown that these difficulties are of such a nature that the whole risk of loss rests on the consumer, while the manufacturer is comparatively safe;—it certainly cannot be deemed unreasonable on the part of the consumers if they should ask for some guarantee that their interests will be protected. These interests are too weighty to be left to the mercy of a chance where any thing more reliable can be had. If the manufacture could be conducted by a corps of scientific and experienced laborers, constantly aware of every thing going on, always on the alert to anticipate and guard against all possible occasions of loss, both to the public and to the manufacturers, consumers might well rest satisfied. But the more widely we depart from such an Utopian, such an impossible condition of things, the more necessary it becomes to provide some safeguard for the public. Whether any, and what safeguard can be found in this case, may be considered at another time.

For the American Gas-Light Journal.

NEW EXPLOSIVE COMPOUNDS.

Messrs. Editors,—In your last number is a very interesting article under the signature of "C. S.," on Professor Bœttger's discovery of some new explosive compounds formed by the action of illuminating gas on saline solutions. One of these compounds (formed by passing the gas through a solution of dichloride of copper in ammonia) is probably identical with, or nearly allied to, a remarkable body which I examined many years ago. I think it was in the year 1839 that a workman employed by the Manhattan Gas-Light Company, after removing from a dwelling some gas-fixtures which had been several years in use, put one of the copper tubes to his mouth for the purpose of testing its permeability, by forcing his breath through it. Instantly a loud explosion took place, which so lacerated his mouth and fauces that his life was destroyed in a few hours. A similar accident occurred in another place shortly after this, but without any serious consequences. Mr Marsh, who at that time had charge of the gas-fitting department of the Manhattan Company, sent to my laboratory five or six pieces of the tubing, (each six to ten feet long), with a request that I would examine them, and, if possible, ascertain the cause of the explosion. When I received the tubes, the open extremities were carefully tied up in papers, to prevent any substance from getting into the interior. Fastening in a strong bench-vice one of the shorter pieces, I scratched the inside gently with a bent wire, when a severe explosion occurred, and a large volume of black smoke and dust were projected from the tube. On looking into another piece, it was found to be lined with a thin, blackish crust, which I supposed to be the explosive compound. No doubt the fatal accident was caused by the friction of some loose particles which were forced along the tube by the breath.

In order to obtain some of the material for examina-

tion, a number of deep circular cuts, about eighteen inches apart, were made on one of the tubes with a file. By a moderate strain, fracture was effected at these cuts, and thus a number of short pieces were obtained. By holding one of these, a little inclined, over a sheet of paper, and tapping it gently, the explosive crust was detached little by little in the form of scales, and at length about a teaspoonful of it was collected. In a strong light the color of the scales was dark brown, and when carefully crushed was reddish brown. The exterior surface glimmered, indicating a crystalline structure. When a minute portion of the compound was struck with a hammer it detonated, throwing out sparks; touched with a hot iron, it flashed like gunpowder. The temperature necessary to produce explosion was about 400° F. Some of it fired from a small gun drove a ball through a stout piece of wood. When cautiously mixed with chlorate of potash, it exploded powerfully by heat or friction.

Some of the compound was covered with water, and boiled for several hours without dissolving any portion of it, or diminishing its explosive quality.

A few grains of it were put in a platina crucible, and the cover fastened down with wire. On applying the heat of a spirit lamp an explosion took place, and a little black smoke was forced out. On opening the crucible a voluminous black powder was found, greatly exceeding in bulk the original material. The black substance consisted of finely divided carbon intimately mixed with metallic copper. Diluted nitric acid readily attacked the copper, with the extrication of red fumes, leaving the carbon apparently pure.

I had proceeded thus far in my investigation, and come to the conclusion that the new body was an unstable compound of some hydrocarbon and metallic copper, and given the results to my class at the College of Physicians and Surgeons, as well as shown it to friends who visited my laboratory, when I was informed that Dr. Chilton had also received some of the tubes from the gas company, and was engaged in analyzing the new explosive compound. As it was believed that Dr. C. was a little earlier than myself in commencing his researches, I yielded the field to him. After some interruption in prosecuting his analysis, he arrived at the conclusion that the explosive body might be a croconate of copper, and his interest in the subject was so much diminished that he pursued it no further. The discovery made by Professor Bœttger renewed my desire to investigate the nature of the substance formed in copper gas-tubes. There can be no doubt that his copper compound is of the same nature as mine, although it differs in some respects. The former is of a different color, and is more explosive than mine. This may be owing to the mode of its formation, as well as its greater purity. It was believed by the engineer of the gas-works, that for some time before the accident occurred the gas had not been thoroughly deprived of ammonia and other impurities. This remarkable substance is not likely to be formed again in our gas-tubes, as these, for many years past, have been made of iron alone, the gas having no sensible action on that metal. The opinion that I advanced long ago as to the nature of this body is the same as that entertained by Bœttger respecting the composition of his new explosive compounds. He says that we cannot yet determine which of the hydrocarbons is united with the metal, but that it is of very remarkable composition, acting like a compound radical, similar to cyanogen.

JOHN TORREY.

FOR THE AMERICAN GAS-LIGHT JOURNAL.

CINCINNATI, O., 20th September, 1859.

I TAKE pleasure in endorsing the statements of the correspondent CARBON, in the last number of your JOURNAL, who claims for S. V. Merrick, of Philadelphia, the credit of first introducing in the United States, a correct plan and system for gas-works. His report to the Trustees of the Philadelphia Gas-Works, written in 1834, contains recommendations, showing great judgment and discrimination in their selection out of all the varieties and plans adopted in the cities of Europe. These recommendations and plans are the same, as mostly all of the successful gas-works in the West have been built upon, the only important changes being clay retorts and exhausters, both of which may be said to be yet on trial.

As *one* of the oldest, if not *the* oldest, gas-works' superintendent in the West,—having been sent out in 1839, by Mr. Merrick, to take charge of the construction of the Louisville (Ky.) Gas-Works,—I take the liberty of thus addressing you, by virtue of the general invitation to forward communications, as published by you; and in full knowledge of your editorial privilege, namely, to throw into the fire all such communications as you consider too long or too stupid for reading!

While thus acknowledging the successful results in Philadelphia and the West, we must not forget to say something of the enterprises of the great pioneer of gas-lighting in the South—James H. Caldwell—probably the most extensive owner of gas stocks on the continent of America. He obtained from the Legislature of Louisiana, in 1832, a "*Charter-seule*," or charter in his individual name, for the gas-lighting of New Orleans, which city first was lighted with gas in 1834, under his auspices, with Mr. Barlow, of London, as engineer. He next, in 1836, under a charter similar to that for New Orleans, built gas-works in Mobile, of which establishment he is still the sole owner. Afterwards in 1842, he was the main stay in the construction of gas-works for Cincinnati, of which establishment he is now President and principal owner. Besides these, he has aided, by his money, the construction of gas-works in several other cities.

The two subjects upon which the gas and water engineers in the West are at present most *exercised*, are clay-retorts, and meters for the measurement of water. Through the means of the AMERICAN GAS-LIGHT JOURNAL, individual experience may be given, so as to supply valuable comparisons as to results; and to lead the way, I furnish you with my experience in many of the gas-works under my superintendence. The iron retort used is the common D retort, twenty inches wide, seven feet nine inches long, and weighing two thousand pounds; the average amount of purified gas produced by this retort, is 1,500,000 cubic feet—the average duration, 15 months. The retorts are grouped both as 3, and as 5, to the oven; with open setting upon firetiles and firestones, at a cost of $20, for resetting each retort. The retorts are not spared—for the heats are kept up so as to produce an average of 4¾ cubic feet of purified gas to each pound of Pittsburgh bituminous coal. These results are not derived from an experimental retort, but from the usual working of several gas works during the last four years' average.

Can better results be obtained from clay retorts, according to the experience in the United States? If so, let us have the figures as statistics.

As to meters for water, they can scarcely be said to be used in the West; only a few, and those imported, having been set up as experiments by water works companies.

The great advantage which resulted to gas producers and consumers by the introduction of the gas-meter, would undoubtedly be felt, if a perfect meter for water were produced, for the principle involved is precisely the same in supplying either gas or water by meter measurement, or by rating in proportion to the number of burners, or size of the house using them. If supplied by meter, the careful consumer economizes by preventing a needless waste, and pays only for what is used. If supplied by rating, the main inducement to carefulness is removed, because the careful consumer pays just the same as the careless one; and not only is a considerable amount uselessly wasted, but the careful consumer is absolutely taxed to pay for the carelessness of his neighbor, as the rating must be fixed to cover the *average consumption*. Justice requires that each consumer should be charged for the amount used. The seller is likewise benefitted by the meter; because the buyer becomes more careful in preventing waste, through leaking pipes, cocks, or hydrants, if such waste has to be paid for by the buyer, as it would be where a meter is used. Can a meter for water be relied upon which indicates the amount of water used by means of a wheel suspended in the pipe, showing the velocity of the current when the water is drawn? Or, is the only reliable meter for water the alternate charging and emptying of a chamber as you measure wheat in a bushel measure?

Are meters for water manufactured in the United States, on either or both of these principles? Or, why is there no demand for them while gas is sold almost every where by meter-measurement?

Your obedient servant,

JOHN JEFFREY.

P.S.—To show you that I address you from no mere idle curiosity, I send you by to-day's mail, some printed documents, which prove that I am deeply interested in the affairs to which the AMERICAN GAS-LIGHT JOURNAL is specially devoted.

[In reference to the inquiry about meters for measuring water, we know of none reliable, excepting those imported from England. If there are any in America, let us see them. There is to be an enormous demand for them, and that very soon.—ED.]

A NATIONAL GAS-LIGHT ASSOCIATION.

THE GAS-LIGHT ASSOCIATION of the State of New York, foreshadowed in the last number of the AMERICAN GAS-LIGHT JOURNAL, is a scheme the proposed scope of which, confers great credit upon its originators, and whose execution must inure to the vast advantage of the corporations most immediately involved. To the smaller of the gas companies so associated, its benefits will be real and tangible, as placing at their disposal, and offering for their adoption, those niceties of construction and of practice which have resulted from the experience of their bulkier and more mature *confrères*. And even to these last, the "Tritons among the minnows" of our gas-light system, the plan must recommend itself; we are none of us too old to learn, and a suggestion dropped at hap-hazard by a novice, has often, ere now, served as clue to a problem which had previously baffled the study of experts.

The larger companies, too, will have diverted from their attention the converging streams of inquiry which have latterly made such inroads upon the time of their officers, but will be then addressed to the association direct. So far as the State of New York is concerned, the organization, as projected, is perfect; but why should such an institution have its limits, or, if any, such narrow limits? Have not the Southern and Western companies the more need of information, from the fact of their distance from the two great foci of our system? Their engineers, who, as a class, are men of high intelligence, and respectable education, are far more widely removed from the centres of reliable information than gas-managers in our own State, and surely need and deserve equal facilities with them. Why, then, cannot a NATIONAL GAS-LIGHT ASSOCIATION become more than a subject of editorial comment,—an actual fact—a realized conception. It can strike none as Utopian, since a tax of nominal amount, and the hearty concurrence of its beneficiaries, are the only conditions necessary to its success. Let it once be initiated, either through a Convention of Gas-Engineers, or by means of an organization by States, and company after company will wheel into the ranks of its supporters. Before the centralized strength, and authenticity of information, which will be the necessary results of a National Gas-Light Association, a thousand fallacies of practice will give way:—by means of the fraternization of gas-engineers so caused, a thousand asperities will be softened, and countless prejudices removed. Its purpose being of enlarged benefit, its realization will confer dignity upon gas-lighting, and give prominence to its exponents.

The enormous mass and reliable character of its statistics, will, under each Annual Report of the Association, be a very *vade mecum* to the gas-engineer. It will warn against the rocks upon which this company has split, and serve as a beacon to the channels through which the progress of that has been under prospering skies; it will assign each engineer his proper place in the estimation of his fellows, beget an honorable spirit of emulation in the breasts of all, and incite to vigorous study and care him whom it proves a laggard in the race.

We trust to receive a more complete elaboration of the idea at the hands of some of our valued correspondents in time for our next issue, for there is surely sufficient *esprit du corps* among AMERICAN GAS-ENGINEERS to shoulder this enterprise, and insure its accomplishment. For ourselves, we cheerfully pledge the columns of the AMERICAN GAS-LIGHT JOURNAL to its advocacy and free discussion, and trust that so mighty an engine for the dissemination of practical data, may be immediately set in motion.

ARTESIAN WELL AT LOUISVILLE, KY.

IN *Silliman's American Journal of Science and Arts* for March, 1859, p. 174, is a full description, by Dr. Smith, of this extraordinary well. Its depth is 2,086 feet; diameter, 5 inches to 76 feet depth; thence 3 inches to the bottom; flow of water, 230 gallons a minute, or 330,000 gallons in twenty-four hours; rise above the surface, 170 feet. A complete analysis of this wonderful stream is given. Pieces of rock thrown into the mouth are ejected like chips of pine wood Its mechanical force is equal to a cylinder of a steam-engine 10 by 18 inches under 50 lbs. pressure, with a speed of 55 revolutions per minute—a force rated at about ten horse-power! The temperature of the water is 76½° F., and is not affected by heat or cold. The temperature at the bottom of the well has been ascertained, by sinking a Walferdin's registering thermometer to be 82° F. Its specific gravity is 1.0113. Its solid contents on evaporation of one wine-gallon, are 915 grains. The source of the water is supposed to be near Dix Creek, east of Harrodsburg, among rocks which are cavernous and waterbearing at an elevation of 500 feet above Louisville, and 75 miles distant.

We are sorry to hear that the subscription list of *Silliman's Journal* was diminished by the commercial troubles of 1857. The effects of that having disappeared, a hearty support should be given it by every intelligent American. The price is but five dollars per annum.

IMPORTANT TO GAS-CONSUMERS.

ON THE CAUSES OF THE VARIABLE ILLUMINATING POWER OF COAL-GAS.—We presented a series of experiments by Professor Aikin, of the University of Maryland, in the August number of the AMERICAN GAS-LIGHT JOURNAL, on the injurious effect produced upon coal-gas by contact with water, (the last editorial paragraph, upon which, by-the-by, was carelessly left by our reader without quotation marks, it was clipped from the *London Journal*,) together with counter experiments, by Professor John Torrey, U. S. Assayer, of New York, between which a noticeable difference of opinion was apparent. We now present a second communication from Professor Aikin on the subject, which will be generally read, not only by gas-companies, but by the larger class of gas-consumers, as well from the universal interest felt in the subject, as from the distinguished position occupied by these two gentlemen in the scientific world.

EXCHANGE NEWSPAPERS.—We have received a variety of newspapers containing flattering notices of the AMERICAN GAS-LIGHT JOURNAL, with invitations to exchange, which we must respectfully, as we do regretfully, decline. The JOURNAL is not a miscellaneous paper, therefore the information derived from promiscuous exchanges, would not avail us.

PATENTS.

UNITED STATES.

25,245.—B. S. Church, of Manhattanville, N. Y., for an Improved Water Meter:

I claim, first, The arrangement of a drum, A. with the chamber, B, and buckets, C, as described, in combination with the trough, G, and the air-chamber, D, and operating substantially as and for the purpose set forth.

Second, The arrangement and combination of the trough, G, the pipe, H, the chamber, I, the air-chamber, D, and the drum, A, to operate substantially as and for the purpose specified.

25,275.—Samuel Nowlan, of New York, N. Y., for an Improvement in Apparatus for Manufacturing Illuminating Gas:

I claim the gas exhaust and expelling wheel, interposed between the retort and the condenser, constructed and arranged so as to operate substantially in the manner and for the purposes set forth

25,316.—L. R. Breisach, of New York City, for an Improvement in Making Gas from Wood:

I claim the process of manufacturing illuminating gas from wood' by distilliing the same in two retorts of varying temperatures, as set forth, one of which retorts is charged with charcoal, varying in amount according to the conditions indicated, the whole process being conducted as set forth.

[This is an improvement on a process for making gas from wood which was invented by Professor Pettenkoffer of Germany, and introduced into this country by Mr. Breisach, in 1858. By this improvement it is claimed that a larger quantity of gas can be made of a better quality, and with less labor. The inventor has paid much attention to this subject.]

25,372.—Daniel H. Solliday, of Philadelphia, Pa., assignor to Edward H. Ashcroft, of Boston, Mass., for an Improvement in Gas-burners:

I claim the application of the conical or chambered burner, A, to the main burner, B, in manner and for the purpose substantially as set forth.

ENGLAND.

413.—James Copcutt, 26 Kirby street, Hatton Garden, London, for Improvements in Obtaining Light from Gases. Patent dated Feb. 14, 1859.

490.—Samuel Ridge, of Hyde, Chester, millwright, for Improvements in Coupling or Making the Joints of Pipes and other articles. Patent dated Feb. 23, 1859.

491.—William Ashton, of Heaton Norris, in the county of Lancaster, for Improvements in Gas Regulators. Patent dated Feb. 23, 1859.

527.—John Leigh, of Manchester, surgeon, for Improvements in the Purification of Coal Gas. Patent dated Feb. 28, 1859.

Provisional Protection has been granted for the undermentioned Inventions.

1788.—John Hewett, of the firm of Hewett, Allott & Walker, accountants, of High street, Sheffield, for Improvements in Self-Acting Water-Closets. Aug. 3, 1859.

1795.—William Henry Maxwell Blews, of Birmingham, manufacturer, for a New or Improved Regulator for Gas-burners. Aug 3, 1859.

1797.—Thomas Lister, of Sheepbridge, Derby, engineer, for an Improved Sanitary Water-Closet. Aug. 4, 1859.

1810.—Francis William Beaumont, of Clapham, Surrey, civil, mechanical, mining, and gas engineer and surveyor, for a Hydraulic Apparatus, applicable to transmitting, regulating, and measuring the supply or flow of liquids. Aug. 5, 1859.

1828.—John Henry Johnson, of 47 Lincoln's Inn Fields, and Glasgow, for an Improved Signal Light, and in the apparatus employed in the production thereof. A communication. Aug. 8, 1859.

1835.—Thomas Dunn, of Manchester, engineer, for Improvement in machinery and apparatus for elevating and regulating the level and flow of liquids-part of which is applicable for propelling vessels, Aug. 9, 1859.

1859.—David Hulett, of 55 and 56 High Holborn, London, gas engineer, and George Prudden, of Shefford, Beds, gas engineer, for Improvements in apparatus for the Manufacture and Distribution of Gas, and in apparatus applicable for Internal or External Illumination. Aug. 11, 1859.

1889.—William Gossage, of Widnes, in the county of Lancaster, chemist, for Improvements in the treatment of certain offensive liquids, and of noxious gases liberated from such liquids. Aug. 16, 1859.

1901.—Hyam Jacob Hyams, of Holywell street, Westminster, gas-meter maker, for Improvements in the construction of Wet Gas-meters. Aug. 18, 1859.

Notices have been given of intention to proceed with the undermentioned Inventions.

853.—George Frederick Chantrell, of Liverpool, furnace engineer, and Edward Dutch, of the same place, commercial traveller, for Improvements in the apparatus for regulating the quantity of water to be used for the flushing of water-closets, and other purposes. April 5, 1859.

969.—William Prosser, of 25 Dorset Place, Dorset Square, London, gentleman, for Improvements in apparatus employed in the production of light. April 18, 1851.

1091.—Joseph Souquiere (called Emile), of 29 Boulevard St. Martin, Paris, civil engineer, for a New or improved process of Distilling Coal. April, 30, 1859.

HANOVER.

Hunt & Pochin, of Manchester, England, Apparatus for Purifying Coals and Resinous substances, without decomposing them.

S. Etster, of Berlin, a mechanical arrangement in Gas-Meters for maintaining a constant water-level.

PRUSSIA.

Martini, of Rothenborg, a new kind of Furnace for the manufacture of Oil tar and other fossil substances.

CEMENT AND LEAD JOINTS FOR MAINS.

We print the following variety of opinions on the best mode of joining mains, from which some estimate may be formed of their respective value for particular climates and soils. We are frequently asked which material is most desirable, and submit the experience of others in preference to the theories of any one.

LEAD.

Alexandria, Va.—Report mains laid first with cement—very leaky; then with lead and tight.

Bangor, Me.—Find lead best in defective foundations and made land, because more flexible than cement.

Dubuque, Iowa.—Prefers lead, because it stands frost better.

Genena, N. Y.—Lead is best: will yield if pipe settles; can be easily tightened by caulking irons, and is easily melted out when pipe is taken up or changed.

Jackson, Mich.—Lead is most reliable; cement is porous, and cannot be caulked.

Keokuk, Iowa.—Think lead less liable to leak, and more easily repaired.

Lancaster, Pa.—Lead makes the closest joints, and will not leak if pipes settle.

London, C. W.—Make all lead joints, except the turned and bored ones; prefer the latter when turned true.

Louisville, Ky.—"We know of no other material that can be relied upon for tight joints but lead, which permits the joints to contract and expand and still keep the joints tight." Mr. Courtenay's reports are a model for any company. He has ordered thirty-three clay retorts from Europe and three from Cleveland, O.

Madison, Ind.—Report that their joints were made first with cement, but leaked, and were re-joined with lead; are now pretty tight.

Middletown, Ct.—Use lead and gaskets; joints tight; not five per cent. leakage.

Milwaukie, Wis.—Think expansion and contraction crack all other joints but lead.

Montreal, C. E.—Lead and red-lead. Driving joints with red-lead considered best for this climate.

Ottawa, C. W.—Mains turned and bored, and joined with red-lead.

Portland, Me.—Prefer lead, because cement cracks from action of frost.

Portsmouth, Va.—Tried cement, which did not answer, and now use lead.

Savannah, Ga.—Jas. R. Smedberg, Esq., engineer of these works, considers lead the only fit material in cold climates, and better in warm; easily "set up," and to a small degree flexible.

CEMENT.

Akron, O.—Prefers cement, from observation, for light soils, as the vibration caused by travel would cause lead to yield quicker than cement.

Alleghany, Pa.—The contractors used lead, but the superintendent prefers cement; reason—never found cement to leak, but lead does.

Attleboro', Mass.—Use cement with tarred gaskets, which they think best for small pipe.

Columbia, Pa.—Use lead, but believe cement better, as it makes an easier and tighter joint, and is more durable.

Lynchburg, Va.—Report their joints are cement, but are not suitable, and should be lead.

Manchester, N. H.—Use cement with gaskets. Soil is sandy; therefore the frost acts but little on the pipes.

New Albany, Ind.—Use hydraulic cement with a lead joint to each one hundred feet.

Newton and Waterton, Mass.—We find Roman cement less liable to crack in setting.

Pawtucket, R. I.—Joints are made of tarred rope and cement.

Portsmouth, O.—Uses cement because it stands without repairs or leaks.

Providence, R. I.—Use cement up to six inches—above that, lead.

Salem, Mass.—Prefer cement; it costs less and becomes as strong as the iron.

Saratoga Springs, N. Y.—Use lead, but think cement as good and cheaper.

Worcester, Mass.—Think the adhesive power of cement to iron is much greater than lead, and makes a better joint.

HO! FOR ENGLAND.

Mr. T. S. C. Lowe, of New Hampshire, is constructing at Hoboken, near New York, an immense aëriaship—said to be five times larger than the largest ball loon ever built—in which he expects to set sail early this month, and to land in England in forty-eight hours from the time of starting. We shall send copies of the American Gas-Light Journal by him to our English subscribers, of course. The dimensions of the air-ship "City of New York," are to be as follows:

Greatest diameter—feet	130
Transverse diameter—feet	104
Height, from valve to boat—feet	350
Weight, with outfit—tons	3½
Lifting power (aggregate)—tons	22½
Capacity of gas-envelop—cubic feet	725,000

Six thousand yards, or fifty-four thousand square feet, of twilled cloth have been used in the construction of the envelop, and seventeen sewing machines have been employed in connecting the pieces. The upper extremity of the envelop, intended to receive the gas-valve, is of triple thickness, strengthened with heavy brown linen, and sewed in triple seams. The pressure being greatest at this point, extraordinary power of resistance is requisite. It is asserted that one hundred women, sewing constantly for two years, could not have accomplished this work, which measures by miles. The material is stout, and the stitching stouter.

The varnish applied to this envelop is a composition the secret of which rests with Mr. Lowe. Three or four coatings are applied, in order to prevent leakage of the gas.

The netting around the envelop is equal to 160 tons. The basket is circular, twenty feet in circumference, and four feet deep. It is to be warmed by a lime stove, which is to furnish heat without fire. Below the basket is a metallic life-boat, containing an Ericsson engine, designed to control a propeller, by which means it is believed a regulating power may be obtained. The propeller is fixed in the bow of the life-boat, projecting at an angle of about forty-five degrees. From a wheel at the extremity twenty fans radiate. Each of these fans is five feet in length, widening gradually from the point of contact with the screw to the extremity, where the width of each is 1½ feet. Mr. Lowe claims that by the application of these mechanical contrivances, his air-ship can be readily raised or lowered, to seek different currents of air; that they will give him ample steerage way, and that they will prevent the rotary motion of the machine.

Mr. Lowe is engaged daily in the personal superintendence of the process of manufacture. We found him the other day hard at work in an open field, assiduously testing the progress of certain gallons of a villainously-smelling compound, which boiled furiously at a temperature of 600 degrees.

The air-ship will carry weight. Its cubical contents of 725,000 feet of gas suffice to lift a weight of 22½ tons. With outfit complete, its own weight will be 3½ tons. With this weight nineteen tons of lifting power remain, and there is accordingly room for as many passengers as will care to take the venture. We understand, however, that the company is limited to eight or ten. Mr. Lowe provides sand for ballast, regards his chances of salvation as exceedingly favorable, places implicit faith in the strength of his netting, the power of his machinery, and the buoyancy of his life-boat, and altogether considers himself secure from the hazard of disaster.

An expense of $20,000 (£4,000) is involved in this experiment. We wish him success, but duplicate copies of this Journal will be forwarded by the *Arabia* to guard against accident. It is suggested that as few passengers as possible should be carried, in order to lessen the amount of *dead weight* to be thrown out.

GREAT FIRE FROM BURNING-FLUID.

Fourteen Horses Suffocated in the Stable.—The brick stable owned and used by the United States Hotel, at Easton, Pa., was destroyed by fire September 17th.

There are several stories afloat in regard to the origin of the fire, but from inquiry, we are satisfied that it was the result of carelessness of one of the men having charge of the horses of the circus company, who went into the stable with a lantern containing burning fluid. The groom, upon entering to prepare his horses for departure, set the lantern upon a narrow board projecting from the wall, from which it fell and exploded, and in a moment or two the fire communicated with the hay in the loft, making it impossible to arrest its progress.

The circus company are heavy losers. Five thousand dollars will not more than cover their losses. Twelve splendid horses were suffocated and lay dead in the stable this morning, presenting a sad sight. Most of them perished through suffocation. One animal that Mr. Rice informed us he would not have parted with for a thousand dollars, was lost. The company have no insurance on their stock.

Have they no gas at the U. S. Hotel at Easton, Pa.?

For The American Gas-Light Journal.

GRADUATING THE PHOTOMETER STAFF.

In the September number of your valuable Journal, your correspondent "J. R. S." gives a formula for graduating the Photometer Staff. This formula is correct, but as these graduations, however faithfully laid down, do not of themselves secure a reliable mode of experiment, I have resolved to say something in relation to the detail of manipulation. Mr. Alfred King of Liverpool, who is the inventor of the plan now in general use in Europe, prefers, when trying gas against candle, to place the lights exactly one hundred inches apart, and when trying gas against gas, to increase that distance forty inches. These distances he found by repeated experiments to be the most convenient and reliable. He also uses the "Bunsen" Photometer, which is not liable to the objection brought against the looking-glass, or "Ritchie" Photometer, of always favoring the gas.

Our reason for placing the burners further apart when trying gas against gas, is, that the divisions on the graduated bar are wider, and the fractions are more easily obtained, while if the candle is at a distance of one hundred and forty inches from the burner, its light is not sufficiently strong to affect the disk as sensibly as is desired.

Mr. King, at the request of several engineers, published a formula for graduating the bar, which you will find in Mr. Barlow's Journal of January 6th, 1857, but as the bars are now to be obtained in London, from Mr. Alexander Wright, and Messrs. Crosley & Co., or of Mr. Samuel Down, of this city, graduated and marked, so that the candle power is read off without the necessity of calculating the squares of the distance, the operator is under no necessity of entering into any such calculation.

Great care should be taken in the selection of the candles, which should be procured from such a source as to insure uniformity of quality. If properly made, they will not be apt to "gutter," but will preserve a nearly uniform light. Some candles have large wicks which project upwards through the flame, and sustain a long black ember, which materially injures the light; there are some which vary so much in their consumption and in the quantity of light emitted during the experiment, that little reliance can be placed upon the results obtained.

The British Parliament have established as a standard, a burner consuming five cubic feet of gas per hour, and a candle consuming one hundred and twenty grains per hour. In the charters of the Great Central, and some other companies, wax candles are specified, but all the recent charters, I believe, specify sperm. It was at one time supposed that wax gave more light than sperm, but this opinion was found to be erroneous. I have in my possession a letter from Dr. Lethely, of London, in which he says: "I have just now received your letter on the subject of the wax candles referred to as '*standard wax candles*' in the Act of Parliament, of 'The Great Central Gas Consumers' Company,' and in reply I have to state, that for some years past—in fact, ever since the termination of the first year of my duties as the Referee of the Great Central Company, I have abandoned the use of wax, and have employed sperm candles of six to the pound. I was obliged to give the wax candles a fair trial, because of its being mentioned in the Act of Parliament, but I was so satisfied of the difficulty in burning it with regularity and fairness, that, after about a thousand experiments, I put it aside.

Those experiments enabled me to ascertain the value of wax as compared with sperm; and now I always employ sperm and calculate the value into wax, the number for wax being as nearly as possible one seventh more than that for sperm. The real numbers which came out of my numerous experiments are these—13.8 sperm of 120 grains consumption, being equal in illuminating power to 15.8 wax of 120 grains.

"P. S.—I have not ordered any wax candles because of the reasons which I have here given of their doubtful value."

In my judgment there should be a standard burner. The English standard is a fifteen-hole argand, with a seven-inch chimney; such a burner will consume five cubic feet of ordinary coal gas under a pressure of less than one-tenth of an inch, and the flame will seldom rise above the chimney; but such a burner will not consume five feet of cannel gas without an increased pressure, and very imperfect combustion. If cannel gas is to be tested, then only four feet should be consumed per hour, which may most profitably be done with a batwing burner, unless the illuminating power of the gas is less than seventeen candle power, in which case the argand will give the best result.

I think the argand is to be preferred for general use, because the light is not only more steady, but the pressure required is less than for any burner with which I am acquainted. If we are to establish a standard of comparison, I think we will do well to follow the plan laid down by the English engineers and chemists, unless it can be shown that we have one superior to theirs; else we will not understand each other when we say, a particular kind of coal produces ten, twelve, or twenty candle gas. If one uses a "Fish-tail," another an "Argand," and another a "Hicks," or a "Gleason," or any other fancy burner, supposed to save twenty-five or fifty per cent. of gas, then will we be as far from deciding what is *the real "candle power,"* as if no standard of comparison was ever sought for.

The Photometer Room.—The selection of a suitable room is an important item among the considerations necessary to insure fairness in the experiments to be made, as well as to provide for the comfort and convenience of the operator. The dimensions of the room should therefore be not less than fifteen feet by eight, with a ceiling as high as can conveniently be obtained, as the combustion of gas from repeated experiments necessarily vitiates the air, and produces an uncomfortably heated room. The ceiling, walls, floor, and wood-work, should be painted a dead black, and the room so arranged as to exclude all the external light, or currents of air.

The Apparatus should consist of an experimental meter, with the index so arranged as to denote the one thousandth part of a cubic foot, with accuracy; a governor, by which the flow of gas to the burner may be regulated to the proper consumption; two float pressure gauges, a striking-minute clock, the "Bunsen" photometer, King's graduated bar, a gas pillar, and candle holder. These, with the candle balance, complete the apparatus for all ordinary operations.

How to be arranged.—The pipe connecting with the meter inlet, should be independent of all other fittings, conveying the gas by a separate, or branch service. The gas to be tested should first pass through a regulator before it reaches the meter, in order to preserve a uniform pressure during registration, the extent of which may be known by connecting a pressure gauge to the meter inlet. The measured gas should pass to the inlet pipe of the governor, the outlet of which conveys the gas to the burner. By connecting the gas pillar *above the burner cock*, to a pressure gauge, the *burning pressure* may be ascertained. The meter and gauges to be so placed as to prevent reflection from their dials, and so connected that the burner shall be at least four feet from the wall, which, although a dead black, has sufficient reflecting power to affect materially the accuracy of an experiment if in close proximity. The candle holder is then to be fastened securely to the floor, and so braced as to avoid vibration, and to be at such a distance from the gas pillar as to measure exactly one hundred inches from the center of each (if that be the distance for which the bar is graduated). The bar will then fit the sockets attached to the pillar and candle-holder, and should be placed horizontally, at such a height as to make the center of the photometer screen on a line with the centers of the flames to be compared, care being taken that from the center of each flame to the center of the screen, when directly over the point marked 1 on the bar, is just fifty inches. When gas is tried against gas, then one burner is placed on an independent pillar, forty inches farther off, and supplied with gas from a duplicate meter, governor, &c., one side of the bar being graduated to suit that distance.

The candle balance should be at a convenient distance from the candle-holder, and the clock suspended and regulated in such position that the time may easily be noted, and at such height as to exhaust the entire length of the weight cord.

The meter, governor, and gauges should be filled with an excess of water, and allowed to remain some hours before adjusting the water levels, that the temperature of the water and the room may be nearly the same. No experiment should ever be made immediately after placing fresh water in any of the apparatus, as the absorption of the gas will greatly affect the registration; the gas should therefore be brought in contact with all the water surface until saturation may have taken place, and if the volume of the gas to be tested will admit, it should be freely burned for some hours to clear the pipes from all other gas with which they may previously have been filled. The room is now ready for use.

Mode of Experiment.—The regulator should be balanced at such a pressure as may always be obtained during the hours of experiment, *that the measuring pressure may be constant in every case.* The consumption of gas may be controlled by adding or removing weights from the governor, until, by the clock, such quantity of gas shall be consumed per minute as may be equal to five feet (or the quantity required) per hour.

As the consumption of sperm cannot be controlled, the quantity of light produced by the candle will vary with its consumption, and the correction for any variation from the standard of one hundred and twenty grains per hour is made according to the rules of proportion, on the supposition that each grain consumed causes a proportionate increase of light. Although this will not in all cases give precisely the same result that would be obtained if the relative quantities were according to the standard, when [the quantity of sperm consumed is not below one hundred and twenty, or over one hundred and thirty-five grains per hour, the difference in the result is not appreciable. The candle having been previously prepared by dividing it in the center, either end may be taken and lit from the point of division, allowing it to burn until all "guttering" ceases, and it presents an ember of a reddish color protruding from the flame. It should then be placed in a socket attached to the beam or balance, and very nearly counterpoised by placing shot or sand in the pan suspended from the other end of the balance, leaving the wight of the candle a little in excess. The gradual consumption of the candle causes the beam to rise slowly to a level position, at which instant the time by the clock and the index of the meter should be carefully noted. By this mode of weighing the candle great error may be avoided, as we thereby obtain the exact rate of consumption, with much less variation in the photometer observations than is found when the candle is weighed before lighting. In cold weather the consumption of sperm for the first two minutes after lighting may be very small, and then very high illuminating power is recorded for the gas, and as their relative illuminating powers are not as the ratio of their consumption, the result will depend greatly on the temperature of the room and the number of observations made. The candle is now removed to the holder, with such precaution used as not to overflow the sperm from the cup at its upper extremity. An inch or two only of the candle should be exposed above the holder, otherwise it may not remain in a vertical position, the importance of which is obvious. Observations are now taken of the relative illuminating power twice in every minute, by sliding the screen to that point at which the spot disappears, or presents the same appearance to the eye on either side. The numbers on the bar may be distinctly read by using a small hand-glass. The screen should be turned so as to present its opposite side to the gas; after each reading of the bar small wooden slide-screens may be found of service, by plowing them on the bar at half the distance between the photometer and the light on either side, thus preventing reflection from the upper edge of the bar.

The index of the meter is noted every minute to avoid too great irregularity of consumption. At the expiration of fifteen minutes the final index is recorded, and the candle simultaneously extinguished by touching the ember of the wick with a piece of sperm guttering, and gently blowing it out, thus preventing smoke and saving the wick. After the candle becomes sufficiently cool, it is again placed in the balance, and the weight in grains, required to restore the equilibrium, is recorded as the *sperm consumption.*

If no guttering has taken place, and the candle light has been nearly uniform, then the mean of the photometer observations is multiplied by the quantity of sperm burnt, the product divided by the quantity of gas burnt, and the quotient divided by 120, which gives the number of candles one cubic foot of the gas is equal to, multiply by five, and the result is the number of candles burning 120 grains per hour that five cubic feet of the gas is equal to. The neglect to make these corrections leaves a wide margin for error, as may be seen by the examples given below, when the record of two experiments on the same gas show respectively as *the mean of the photometer readings* 13.37 and 17.93 candles! *neither of which are within two candles of the real illuminating power.*

Date Place of Trial Burner Candles	Time.	Weight.	Photometer Observations. Min.	½ Min	Meter. Index.	Consmpt'n. Per Min	Per Hour.
					1320		
Begin	6.07		12.80	12 40		78	
End	6.22		13.80	42.60		81	
			12.70	12.40		81	
Difference	.15	34 grs.	13.00	12.80		81	
			12.40	12.70		81	
			13.40	13.6		81	488
			12.80	13.10		82	
1 Cu. Ft. = 3.11		Sperm Candles	12.70	12.80		81	
4 " " =		burning 120	13.40	13.00		82	
5 " " = 15.55		grs. p. hour.	14.00	13.40		82	
			14.30	14.40		81	
REMARKS.			13.75	14.35		82	490
			14 20	13.80		82	
			14.25	14.40		81	
			14 45	14.40	2538	82	246
			200.95	200.15			1,218
				200.95			
				401.10		Total	4.872

Sperm consumed..... 24 grs.
Gas " 1,218

Mean of Observations, 13.37, 13.37×34=454.58 divided by 1.218 the Gas burnt 454.58÷1.218=373.218 divided again by 120 373.18÷120=3.11 multiply by 5, 3.11×5=**15.55** *Real* illuminating power.

Date Place of Trial Burner Candles	Time.	Weight.	Photometer Observations Min.	½ Min	Meter. Index.	Consump'n Per Min	Per Hour.
					2750		
Begin	5.30		17.80	17 80		86	
End	5.45		17.70	17.75		87	
			17.60	17.70		87	
Difference	0.15		17.50	17.30		87	
			17.40	17.70		86	
			17.60	17.60		86	519
			18.10	18.30		87	
			18.50	18.30		86	
1 Cu. Ft.= 3.108		Sperm Candles	18.60	18.60		86	
4 " " =		burning 120	18.30	18.41		87	
5 " " 15.53		grs. p. hour.	17.90	18.30		87	
			17.85	17.75		86	519
REMARKS.			17.80	17.80		87	
			17.90	17.85		86	
			18.20	18.00	4048	87	260
			268.75	269.15			
				268.75			1,298
				533.90		Total	5,192

Sperm Consumed..... 27 grs.
Gas " 1,298

Mean of Observations, 17.93, 17.93×27=484.11 divided by 1.298 the Gas burnt 484.11÷1.298=372.966, divided again by 120, 372.966÷120=3.108, multiply by 5, 3.108×5=**15.55** *Real* illuminating power.

My object in addressing this communication is simply to draw the attention of gas engineers to the importance of the subject, in order that we may have a "uniform standard" of comparison.

Having had the opportunity of witnessing the experiments of Mr. King, I could not but be impressed, with his extreme care to avoid all possibility of error, and trust I have succeeded in explaining his process, which is simple and reliable. T. W. P.

For the American Gas-Light Journal.

DISCHARGE OF GAS FROM PIPES.

Dr. Ure, in an article on the distribution of gas through pipes, says, "The volume of gas discharged from the end of a pipe is directly proportional to the square of its diameter, and inversely as the square root of its length; or, calling the length l, the diameter d, the cubic feet of gas discharged in an hour k; then $k = \frac{d^2}{\sqrt{l}}$."

Experience likewise shows, that for a pipe 250 ft. long, which transmits in an hour 200 c. ft. of gas, one inch is a sufficient diameter. Consequently—

$$200 : k :: \frac{1}{144\sqrt{250}} : \frac{d^2}{\sqrt{l}}; \text{ and } d = \frac{\sqrt{k}\ \sqrt{l}}{455.000}."$$

From this formula he calculates the following proportions:

No. of cubic ft. per hour.	Length of pipe in feet.	Diam. in inches.
50	100	0.4
250	200	1.
500	600	1.97
700	1,000	2.65

and so on. Now, I have, on inquiry, found that, simple as the formula appears, there are many persons connected with gas-piping, in various ways, who cannot arrive at the same results with the aid of it. I think an example or two worked out in your Journal would be very acceptable to several of your non-mathematical readers. Will you, Mr. Editor, or some one of your correspondents, prove the correctness of the formula?

I would like to inquire if there is any better "article" on the distribution of gas through street mains than' that contained in Clegg. His method of "calculation' is simple, but whether it is the best and the one followed in this country, I know not. *En passant*—when is the new edition of this work coming out, and what advantage will it possess over the present one? I hope to see the comparative merits set forth in the Journal when you receive the new edition.

G.

Portland, Me.

OUR SCIENTIFIC CONTRIBUTORS.

We have the pleasure to announce that the following scientific gentlemen will be regular contributors to the American Gas-Light Journal:

Professor W. E. A. Aikin, of the University of Maryland, Baltimore.

Charles T. Chester, Electrician, on subjects connected with gas-lighting by the electric-spark.

Professor James R. Chilton, Analytical Chemist, New York City.

Dr. Chas. M. Cresson, Assistant Engineer, Gas-Works, Philadelphia.

Professor A. K. Eaton, Analytical and Consulting Chemist, New York City.

Professor Henry L. Eustis, Professor of Chemistry and Physics at Lawrence School, Harvard University, Cambridge, Mass.

Professor F. A. Genth, Analytical Chemist, Philadelphia.

Professor Wolcott Gibbs, Professor of Chemistry and Physics in the Free Academy, New York City.

Professor A. A. Hayes, M.D., Consulting Chemist and Assayer to State of Massachusetts, Boston.

Professor Joseph Henry, Secretary of the Smithsonian Institution, Washington, D. C., discoverer of the principle of Electro-Magnetism, as applied to the telegraph.

Professor Charles R. Jackson, Assayer to the State of Massachusetts, Boston.

Professor James J. Mapes, late Professor of Chemistry and Natural Philosophy in the National Academy of Design, and Professor of Chemistry as applied to the Useful Arts, in the American Institute, N.Y.

Commander M. F. Maury, U. S. Navy, Superintendent United States Observatory, Washington, D. C.

Professor James Renwick, Emeritus Professor Natural Philosophy and Chemistry, Columbia College.

Carl Schultz, Assayer's Assistant, United States Assay Office, New York City.

Professor John Torrey, United States Assayer, and late Professor of Chemistry in the College of Physicians and Surgeons, New York.

The Engineers and Chemists of the various Gas-Light and Water Companies, and officers of sanitary associations throughout the United States.

TRANSLATOR.

Captain Theophilus d'Oremieulx, late of U. S. Army; late professor of French at U. S. Military Academy, West Point.

Kennedy's Water Meter.—Mr. Brunel has fitted to the *Great Eastern* steamship twenty of these meters, for measuring the water passing into her boilers. We have one of them on exhibition at our office.

ANSWERS TO CORRESPONDENTS.

A. C., of Pa.—*Your questions about the use of coal tar are fully answered in another column of this number of the* American Gas-Light Journal.

E. D., of Cal.—*Lime is necessary for cleansing gas as an absorbent of sulphur, ammonia, and carbonic acid, while the washers are indispensable for the initiatory treatment of the nascent gas.*

S. S. W., of Ky.—*Dry lime purifyers are used in many gas-works. Exhausters are, as yet, hardly appreciated, but they will soon come rapidly into use.*

E. K., of Iowa.—*American clay retorts are used in several gas-works. We will give you in a letter, as soon as possible, the names of those who have compared them with the English and Belgian.*

R. D. T., of S. C.—*Gas stoves are not a new thing by any means. A Mr. W. S. Ward described to the British Association at Edinburgh, in Oct., 1851, a gas stove, the novelty of which consisted in constructing it of iron plates in a vertical position, so as to expose considerable surfaces for the absorption of heat from jets of gas and for the radiation of heat.*

J. O. R., of Del.—*Chlorin, sulphuric acid, sulphuretted hydrogen, carbonic acid, oxygen, hydrogen, and nitrogen gases, act more powerfully in changing colors when exposed to sun-light than when left in darkness. It is considered a curious chemical result.*

Progress, of N. Y.—*You can, doubtless, obtain the consent of the American Institute to cook your ox by gas, whole or in joints, as you propose. This is unusual, not progressive. You are mistaken in thinking it without precedent. About nine years ago, a monster joint, weighing 535 pounds, was cooked in the Castle yard at Exeter, England, on a dripping-pan environed with brick and surrounded with 216 jets of gas, and covered with sheet iron. It took five hours to roast, and consumed 700 feet of gas of the value of $1. It weighed, after being cooked, 497 pounds—a loss of 7 per cent. of meat. The dripping weighed 23¼ pounds, the ormazome 3¼ pounds; the actual loss by evaporation being only 3½ pounds. To cook this piece of beef by an ordinary fire would have taken fourteen hours. This is a startling fact for hotel keepers to consider.*

D., of Maine.—*Clay retorts of smaller sizes are less economical than those of larger size, owing to the great percentage of fuel required to keep them at a proper temperature for decomposing the coal.*

T. F. & R., Ohio.—*Your town is quite large enough for gas-works; indeed it is quite surprising that out of 20,000 towns in the United States known to have a population of 1,000 and over, there remains a single town without gas-works. If you will limit your capital to $30,000, which is quite enough, we will take one quarter interest. But there must be no watering of the stock. We will supply everything but the land, viz., works, pipes, mains, meters, retorts, gas-holders, purifyers, and all the castings and fittings—but all must be paid for in cash.*

——, Mass.—*You must be aware that we cannot notice anonymous communications. From your intelligent letter we do not doubt the facts; but our rule is to notice nothing that is not responsibly signed. We will not disclose names, but will call upon any company so complained of for a satisfactory explanation, and, in default, publish the complaint, as we did in our second number. In this case, however, you mistake the company; that which you refer to is in Illinois, not Massachusetts. No correspondent need fear the publication of his name, unless he attempts to impose upon us.*

Retort, of Mo.—*When retorts have been at work for some months, their interior surfaces become incrusted with a hard carbonaceous deposit somewhat analogous to alumbago. In process of time, carburet of iron and the more infusible parts of the coke form a thick crust, which must be removed, both to prevent the destruction of the retort and to allow the fuel to have full effect upon the coal contained within. This was formerly effected with great difficulty by crowbars, but it was afterwards found that leaving the retort open and allowing cold air to come in contact with the heated interior, the deposit contracted, and could be broken away in twelve hours without danger to the retort.*

C. A. Q., of Vt.—*There are various theories respecting the flow of gas through pipes. The velocity with which gas issues out of a simple orifice is as the square root of the head of water by which it is pressed. Clegg found that, with a pressure equal to three inches, 852 feet of gas of specific gravity .398 were delivered from a 4-inch main 10,560 yards in length. The co-efficient derived from this experiment is—*

$$\frac{852 + \sqrt{10560} + .398}{16 + \sqrt{3}} = 1993$$

Lightning Rod, of Va.—*The chemical effects of electric discharges have been ascertained by Plucker, who has published the results of his elaborate and interesting investigations of electric discharges in tubes containing rarefied gases. Every chemist and engineer should study this science. Refer to* Silliman's Journal *for March, 1859, p. 261.*

Index, of Toronto.—*A protector gas-meter was invented, about six years ago, by J. Laidlaw, of New York; but the many improvements in the ordinary meters seem to cover the ground you describe.*

A. T. B., of La.—*The first attempt to fill balloons with hydrogen gas was made by the French Academy of Arts and Sciences, under the superintendence of M. Charles, professor of experimental philosophy. It was a bag made of lutestring silk, thirteen feet in diameter, of globular shape, covered with a varnish made of gum-elastic dissolved in spirits of turpentine. The whole machine weighed but twenty-five pounds. It was completed on 23d August, 1783, when the inflation commenced, and was continued, amid many difficulties, until the 27th, when it ascended amid the roar of artillery in the presence of a great multitude. In two minutes it reached an altitude of 3,123 feet, and descended in three-quarters of an hour at a place fifteen miles distant from the starting-point. This successful application of hydrogen gas stimulated the various succeeding experiments. Prof. Wise's narrative will give you a complete history of æronautics from the earliest discovery of ærostatics, in 1780.*

T. P. T., of Mass.—*There have been many attempts besides Paine's, to make illuminating gas of water. Experiments are now in progress—which we shall publish, probably, in our next number—the proprietor of which is confident of a complete success. All those processes are based, 1st, upon an improved method of rendering luminous the gases resulting from the perfect decomposition of water or steam; and, 2d, upon the conservative influence which hydrogen exercises in protecting the matter upon which the illuminating power of gas depends from decomposition by heat. The failures are all traceable to the same sources—first, to the impossibility of securing the complete decomposition of water or steam by any of the means employed, and to the consequent production of a large quantity of vapor, exercising a fearfully destructive influence over the carbonaceous matter undergoing decomposition, for the purpose of rendering the water gases luminous; and, secondly, to the presence in the water gases, of from ten to fifteen per cent. of carbonic acid, the injurious effects of which upon the flame need not be alluded to, and the expenses of abstracting which by any of the ordinary methods are so considerable as to materially augment the cost of manufacture, besides diminishing the volume of saleable gas.*

Inventor, of N. H.—*There are so many new gas-burners invented every year, it is by no means certain that your anticipations will be realized. We will procure you a patent if you are inclined to risk its cost.*

N. B., of Cliff St., N. Y.—*Thanks for your kind approbation. We do not intend the* American Gas-Light Journal *to be a "heavy scientific machine," as you say, but a live, popular, scientific paper, with enough appropriate matter incorporated into it to be instructive, while it is acceptable to the masses who love gas-light, fresh water, and perfect sewerage.*

S. D. F., of O.—*Wet lime is preferred to dry as a purifier of gas, mainly because of the offensive effluvia emitted by the latter. You are aware that totally dry lime was never used, but what is called hydrate of lime, sufficiently watered to slack and reduce it to powder. By wet lime is meant a fluid mixture of 24 gallons of water to 1 bushel slacked lime. The French call it the milk of lime.*

L. E. L., of Geo.—*The sewer mains in Brooklyn, N. Y., are not made of iron, but are Scotch vitrified ironstone, an admirable substitute, being incorrosive and almost imperishable. These pipes are made in America also.*

A. A. A., of Conn—*Our terms are $3 per annum, cash down. You say you cannot find them in our September number. Look on pages 1 and 8; it is as plain as any gas-light could make it. Prove that you have seen it by sending us ten subscriptions by which you will gain $5.*

From the Burlington (N. J.) Dollar Newspaper.

American Gas-Light Journal.—This publication supplies a want which has long been felt in this country. England has her journal devoted to this subject, but until now we have been without one, though there are some two hundred and fifty gas-works among us, established at a cost of over thirty millions of dollars. The Journal is published monthly by Messrs. John B. Murray & Co., No. 40 Wall street, New York, at $3 per annum. These gentlemen are largely engaged as bankers, and in buying and selling stocks and securities of the various gas companies throughout the country. The Journal has among its contributors many of the best scientific writers, and contains a mass of information on the subject of gas and water, such as has never reached the public through the press. Every person connected with a gas company should be supplied with this publication. It contains hints of great practical value to all such, copious notices of all new improvements, and a multitude of advertisements connected with the business. It enjoys already a circulation of 10,000 copies.

We thank the editor (a stranger to us) for his kind notice. It is a sample of what we have received from hundreds of editors throughout the United States.

Wood-Gas Apparatus.—Our attention has been called to Werner's patent, advertised in our columns. We shall examine into its merits, and report upon them in our next.

THE AMERICAN GAS-LIGHT JOURNAL represents the three important interests—

GAS-LIGHT, WATER-SUPPLY, AND SEWERAGE.

Its purpose is to ascertain and make known all new discoveries in the science and economical application of GAS-LIGHTING, and promote thereby the interests of companies and of consumers; to encourage and aid the introduction of PURE WATER from Lakes and Rivers into Towns and Cities, and to improve the system of SEWERAGE, VENTILATION, and DRAINAGE.

Incidentally with these results, the business of all Gas Fitters and Plumbers, the erection of Gas Works and Water Works, the consumption of Coals, the manufacture of Gas Pipe, Gas Fixtures, Meters, Retorts of iron and clay and their varied apparatus; of Drain Pipes, Ventilating, Heating and Dredging Machines, will be increased immeasurably.

THERE ARE 20,000 CITIES AND TOWNS IN THE UNITED STATES, CAPABLE OF SUPPORTING GAS-WORKS, WHILE THERE ARE NOT 400 GAS-WORKS IN OPERATION IN THE WHOLE COUNTRY!

New works are now springing up, however, every week, and they will continue to increase rapidly hereafter.

Our Tables will present to the capitalist, opportunities for desirable investments in the shares of sound and prosperous gas-light companies, paying liberal and regular dividends.

THE AMERICAN GAS-LIGHT JOURNAL is published on the first day of each month. It will be issued more frequently whenever it shall appear to be demanded, and it will be enlarged from time to time to keep pace with the requirements made upon it.

All new inventions relating to the Gas-light, Water, and Sanitary interests; all legal decisions affecting the rights of companies and consumers; all progressing and projected works; all experiments and plausible theories: in fine, every item of intelligence relating to its three prominent *specialties*, will be found in the columns of the AMERICAN GAS-LIGHT JOURNAL.

There is no person living who has not a direct concern in these subjects, and it is by extending our subscription list to the utmost limits that the greatest benefits will result to all; to which end, we solicit the kind offices of our friends and of communities.

TERMS—CASH IN ADVANCE.

SUBSCRIPTION—In the United States and British Provinces, **$3** per annum.

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Do. To English subscribers **13s.** per annum, payable to our credit with our London Bankers, Messrs. BARING BROTHERS & Co.; to French and German subscribers, **16f.** per annum, payable to our credit with Messrs. LANSING, BALDWIN & CO., Paris.

ADVERTISEMENTS—Displayed, according to space occupied.

Do. On first and second pages, **50c.** per line, each insertion.

Do. Of Gas-light Companies' dividends, $1 each.

All moneys must be paid to our bankers, or remitted to our office, and all communications should be addressed to the proprietors,

JOHN B. MURRAY & CO.,
No. 40 WALL STREET, NEW YORK CITY.

☞ Remittances by mail at the risk of the proprietors.

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TO CORRESPONDENTS.

Ten copies of each *original communication*, published in the AMERICAN GAS-LIGHT JOURNAL, are, if requested, at the disposal of the author. Authors should specify, at the head of their MSS., the number of extra copies desired; it is too late after the forms are broken up.

The titles of communications and the names of authors should be fully given. The articles intended for any number should be sent in, if possible, by the 15th of the month, or the pages may be re-occupied.

The American Gas-Light Journal,

ISSUED MONTHLY.

SATURDAY, OCTOBER 1, 1859.

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TAPPING OUR MAINS.

THE *London Journal of Gas-lighting* appropriated to itself, on pages 480, 481, 482 of its August 30th number, our entire Tables of American, Canadian, and Cuban gas-light companies, *verbatim, literatim, et punctuatim*, without the slightest intimation as to where it found them, revelling, doubtless, in the (mistaken) notion that the English public would look upon it as an evidence of boundless enterprise and originality of its own.

The act itself is as cool and refreshing as the notion is erroneous; for the very next mail or two, after the issue of that enterprising sheet, placed in the hands of every gas-light company and principal merchant in Great Britain, the September number of the AMERICAN GAS-LIGHT JOURNAL, containing the original pages which our London friend had so quietly and artistically photographed.

When we were first apprised, by one of our city gas-light companies, of this little burst of generous rivalry, we felt that our days and nights of labor in compiling statistics gathered, for the first time, here, there and everywhere, over a territory sparsely populated, thousands of miles in extent, involving a correspondence of more than five hundred letters written by us, and as many more (some in fearful English!) received and classified; not to mention the considerable expense attending such an initiative, deserved at least an intimation that the statistics were "borrowed," although the unconscious "lender" might not be designated. But we reflected that there is compensation in all things in this gaseous sphere; and as we belong to that peculiar class who like to see a trade go through, even if we don't make anything by it, we accept the implied terms on which our property was impressed, taking the risk of coming off square in kindly reprisals before the year is out, though our ancestor has the start of us now.

EXTRA EDITION

FOR INVENTORS AND VISITORS

AT THE

FAIR OF THE AMERICAN INSTITUTE.

WE print of this number of the AMERICAN GAS-LIGHT JOURNAL a large edition extra, of from ten thousand to twenty thousand copies, to supply inventors, visitors, and strangers at the Annual Fair in New York city.

These copies are DISTRIBUTED FREELY AND GRATUITOUSLY in order to make the AMERICAN GAS-LIGHT JOURNAL known to the thousands who visit the Fair, and, through them, to the UNION AT LARGE, thereby INCREASING OUR SUBSCRIPTION LIST, *and benefitting our advertisers.*

Subscription, $3 per annum, payable at our office, or to the person in charge of the JOURNAL, in the Palace Garden, corner 14th street and 6th avenue.

We prepay the postage for the year. A bill bearing our PAID *stamp will be delivered to each subscriber.*

NUMBERING OUR PAGES.

WE begin this month to put the *whole numbers* on our pages. Three numbers of the AMERICAN GAS LIGHT JOURNAL, of 16 pages each, have been issued, making a total of 48 pages The present is the fourth number, so that we commence with page 49, and shall continue with whole numbers through each volume hereafter. In order to preserve uniformity, the back numbers should be paged with ink up to 48.

WATER COMPANIES.

WE are preparing printed forms to be sent to the various water companies throughout the United States and Canada for compilation. Meantime, will not each company kindly send us their charter and last report, if only to acquaint us of their existence, and thereby lessen the great labor which the absence of this information respecting the gas-light companies imposed upon us?

THE EVENT OF THE DAY.

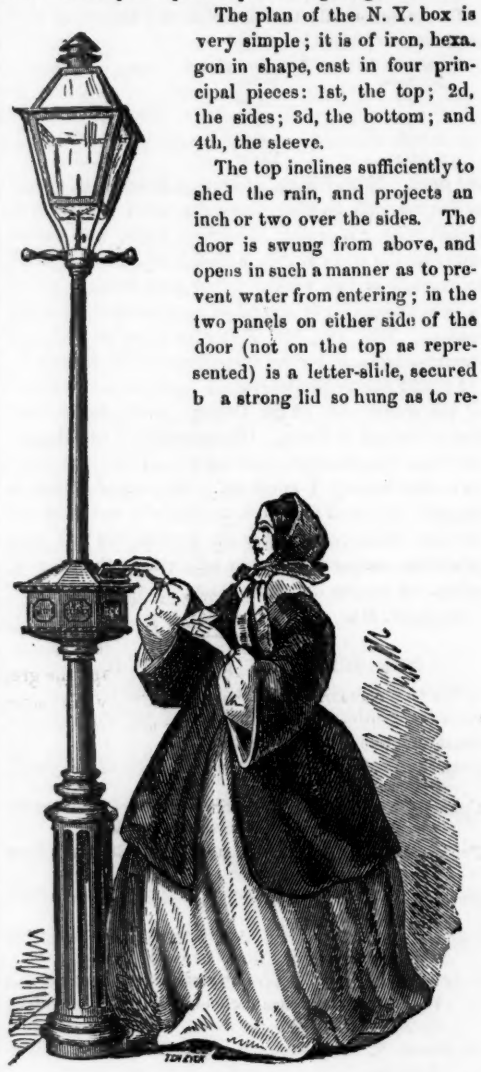
THE substitution of the harbor of New York for that of Portland, Me., as the destination of the monster GREAT EASTERN being strictly a question of *water-supply*, it is appropriate for us to record, as we do, with sincere pleasure, the success of her trial trip abroad, although marred by the sad accident which proved fatal to a dozen poor firemen who were contributing to her glory.

Hearty welcomes will greet her at this port, and they would have been none the less for being piloted by our old friend Comstock—our own *great eastern*—whose heart is as big as the deck he treads. We welcome him home with or without her.

GAS-LIGHT MAIL-STATIONS.

A NEW phase in the successful and useful application of gas-light has just been developed in the city of Philadelphia, by connecting with the public lamp-posts a secure, neat, and convenient letter-box, as illustrated in the engraving below. It is originally the invention of Mr. Albert Potts, of Philadelphia, whose patent is dated March 9, 1858, but material improvements have been made in those intended for this city and State.

We have seen in several European cities receptacles for letters in posts, but they are objectionable from their shortness, being undistinguishable at night, and in the way of pedestrians, while the arrangement which we illustrate combines the convenience of the box itself with the safety and publicity of the gas-light above it.



The plan of the N. Y. box is very simple; it is of iron, hexagon in shape, cast in four principal pieces: 1st, the top; 2d, the sides; 3d, the bottom; and 4th, the sleeve.

The top inclines sufficiently to shed the rain, and projects an inch or two over the sides. The door is swung from above, and opens in such a manner as to prevent water from entering; in the two panels on either side of the door (not on the top as represented) is a letter-slide, secured b a strong lid so hung as to require being held open while inserting the letters, and self-closing, with an outside lip, so that no rain or snow can be possibly driven through the crevices. The bottom is corrugated, or ribbed, nearly an inch in depth, and in case any dampness should penetrate the box it will run off in the little gutters through holes in the bottom, leaving the letters high and dry on the edge of the ribs. The sleeve, which is the greatest improvement in the original box, is intended to slide down the lamp-post and fit into grooves or collars in the top and bottom of the box; a space being left between the sleeve and post through which rain may pour without the possibility of entering. The lock is simple, and yet strong and secure, and so arranged that the key cannot be extracted until the box is locked; no negligence of the postman can therefore prejudice the safety fo the letters. On the door are the words U. S. LETTER MAIL; patented March 9, 1858. On each panel the letletters U. S.

Upon submitting the box to the postmaster at Philadelphia it was considered so desirable that the attention of the Postmaster-General was called to it, and he at once authorized its adoption in that city, where several hundred boxes are now attached to the lamp-posts; and so eager were the citizens to avail of them, that despite the postmaster's public request to wait until they should be declared mail-stations, they were filled several times daily, and the letter-carriers kept fully

occupied in emptying them. The local mail matter has since increased to such an extent that more boxes have just been ordered.

An officer of the General Post-office, who was in this city a few weeks since to examine the new and improved box, on his return to Washington recommended to the Postmaster-General their immediate adoption here, and our Postmaster was at once recommended by the P. O. Department to inaugurate them in this city, but although Mr. Fowler recognizes their great superiority over the tin tea-canisters that now disgrace the post-office route of this metropolis, he considers it an infringement of the carriers' fund to appropriate money for that or any other purpose.

It is estimated that a postman can empty ten of these boxes in the same time that he can one of the old kind, for these are always in sight, always in their place, and firmly fixed in a public street, while the receipt and delivery of goods, a crowd of customers, and other causes, frequently displace the tin boxes in groceries and apothecaries shops, and seriously impede the carriers.

There should be no delay in adopting these boxes for the local mail-service of this great city. We have 39,000 gas-lamp posts now in use, and the number will soon be increased to 40,000. There should be 5,000 of these boxes set up at once, in order to embrace the entire city, and *with four deliveries a day, what a perfect system would be at once inaugurated, and the local mail revenues how materially increased! This is a serious consideration for the Government.*

Other cities have already made application for these boxes. Negotiations are on foot with the postmasters of New Orleans, Mobile, and some other towns, and their adoption throughout the United States will now be general and immediate.

A single letter-carrier can open and empty a hundred of these boxes without scarcely arresting his pace. A turn of the key, seizure of the letters lying on either side of the door close by his hand, and dropping the door again, is all the delay and effort needed.

We have not alluded to, perhaps, the greatest benefit conferred upon the community by this improvement—it is the substitution of government boxes for irresponsible private ones. It is a shame to our postal department that it has hitherto tacitly acknowledged itself incompetent to manage the local mail service of the metropolis, as the mere existence of a dozen petty letter-expresses implies; and the effect of the new arrangement will be to increase the revenues of the department by controlling the entire city letter delivery, and centering in the post-office—where it should be—the responsibility and income which pertain to it.

One of the improved boxes can be seen at the office of the AMERICAN GAS-LIGHT JOURNAL, No. 40 Wall street.

PROFESSOR JOSEPH HENRY.

It is not as generally known as it should be, that to Professor JOSEPH HENRY, Secretary of the Smithsonian Institution at Washington, whose name is this day added to our scientific contributors, is unquestionably due the honor of the "discovery of the principle which proves the practicability of exciting magnetism through a long coil, or at a distance, either to deflect a needle or to magnetize soft iron," which discovery is the foundation of the telegraphic application of those principles, from which others have reaped pecuniary reward and temporary scientific renown. To the first, Professor Henry is indifferent, to the latter, history will fully substantiate his claim.

JOHN B. MURRAY & CO.,
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DRAFTS issued for large or small sums, payable at banks in every city and town in the United States.

AUX POPULATIONS FRANÇAISES ET ALLEMANDES.

LES Propriétaires de L'AMERICAN GAS-LIGHT JOURNAL désirant mériter l'approbation des populations si intelligentes et si inventives de la France et de l'Allemagne se sont assuré, pour la rédaction de leur publication, la coopération des savants les plus distingués du continent d'Amérique. Aussitôt qu'ils auront réuni dans ces deux pays un nombre suffisant de souscripteurs et d'annonces, les propriétaires s'engagent à publier, dans chaque numéro, au moins une page de Français et d'Allemand, choisie parmi les articles scientifiques les plus saillants.

Le génie universellement reconnu et avoué de la France et de l'Allemagne ne cesse d'inventer et de produire des perfectionnements importants dans la fabrication des Gazomètres, des Hydromètres, des Cornues, des Pompes à air, des Becs et des Régulateurs, des Lustres et des Tuyaux d'eau et de dessèchement, en un mot, de tous les appareils destinés à la distribution de l'eau et du gaz; appareils pour lesquels l'immense accroissement du nombre des usines à gaz et des travaux hydroliques en Amérique, doit ouvrir un débouché d'une importance dont on n'a pas d'exemple, du moment où des annonces, présentées avec les garanties que les Propriétaires de L'AMERICAN GAS-LIGHT JOURNAL peuvent donner, indiqueront en quoi consistent ces perfectionnements, et à quel prix on peut les obtenir rendus à bord, dans les principaux ports de l'Europe.

Aux Etats-Unis d'Amérique il y a, au moment où nous écrivons, 20,000 *villes en mesure de subvenir à l'établissement et à l'entretien d'usines à gaz, et de travaux pour la distribution de l'eau, et* 400 *à peine sont dotées de ces précieux avantages!! mais disons-le, tous les jours et sur tous les points, de nouveaux travaux commencent à cet effet, et la consommation des différents appareils qui s'y rattachent doit devenir incalculable.*

L'AMERICAN GAS-LIGHT JOURNAL est la seule publication sur notre continent qui se soit identifiée avec cette spécialité. Nous prierons les personnes qui désirent souscrire à notre journal, ou celles qui voudront bien nous confier leurs annonces, de prendre la peine de nous adresser directement leurs ordres accompagnés de dessins, etc., nous nous chargerons de les faire traduire et de les faire paraître dans nos colonnes avec les illustrations, sous l'aspect le plus favorable.

Notre méthode avec nos clients d'Angleterre, est de mettre en composition leurs annonces et après nous être assurés de l'espace qu'elles doivent occuper, de leur en faire savoir le prix. Dans aucun cas cette méthode n'a manqué d'avoir les résultats les plus satisfaisants.

Nous recommandons cordialement notre entreprise à l'attention et au bon vouloir de nos amis de France et d'Allemagne.

Toute communication devra être adressée de la manière suivante:

MESSRS. JOHN B. MURRAY & CO.,
Proprietors of the AMERICAN GAS-LIGHT JOURNAL,
No. 40 Wall Street, New York City,
United States.

COSTA RICAN BONDS.

BANKERS and others whose Central American collections are in our hands, are notified that the Costa Rican bonds due June 16th, 1859, which we forwarded for collection, were allowed to lie over, the government placing in the hands of our agents new obligations due August 16th, secured by a pledge of the custom-house revenue and other public moneys. By the steamer from Aspinwall, which brought intelligence of the deposition of the lawful president, Senor Mora, and who arrived here an exile, we had advices that our interests and those of our friends are in the joint charge of the American and British Consuls, the latter of whom assures us that they will be fully protected, and we hope to receive the payment of this portion of the government debt by the next mail steamer.

Since writing the foregoing, we have seen President Mora, who expressed his opinion that the bonds would be paid within a few days of their maturity. He does not think the revolution will affect the public business. Our dates from San Jose are to 26th August, when the bonds were still unpaid, but the government were making every effort to retire them, aided by wealthy citizens, who are supplying it liberally with money.

An das Deutsche und das Französische Volk.

Die **Eigenthümer** des **„Amerikanischen Gas-Licht-Journals"**, welche ihr Blatt der intelligenten und hochgeschätzten Bevölkerung **Deutschlands** und **Frankreichs** zugänglich zu machen wünschen, haben zu diesem Behufe die hervorragendsten Talente auf verschiedenen wissenschaftlichen Gebieten in Amerika engagirt und beabsichtigen, sobald als eine genügende Anzahl von Subscriptionen und Annoncen in jenen beiden Ländern gesichert ist, in jeder Nummer ihres Blattes wenigstens Eine Seite mit wissenschaftlichen Leitartikeln in den bezüglichen Sprachen anzufüllen.

Wie allgemein bekannt und nach Gebühr gewürdigt, ist das Talent von Deutschen und Franzosen fortwährend erfinderisch und produktiv in der Vervollkommnung von Gasometern, Hydrometern, Retorten, Gaswäschern, Gasbrennern, Regulatoren, Gasleuchtern, Wasserleitungs- und Drainageröhren, sowie allen anderen Arten von Gas- und hydraulischen Apparaten, für welche die erstaunlich rasch zunehmende Anlage von Gas- und Wasserleitungen in Amerika eine bis jetzt nicht gehörte Nachfrage erzeugen muß, sobald nur durch Anzeigen veröffentlicht werden kann, worin diese Verbesserungen bestehen, und zu welchen Preisen sie in den bedeutenderen Häfen Europas eingeschifft und versendet werden können.

Es existiren in den Ver. Staaten von Nordamerika 20,000 Städte, welche im Stande sind, Gas- und Wasserleitungen anzulegen und zu unterhalten, während von solchen bis jetzt nur 400 wirklich ausgeführt sind! Aber neue erstehen nach allen Richtungen hin, und der Verbrauch von Apparaten aller Art, welche damit im Zusammenhange stehen, muß selbstverständlich in Kürze außerordentlich zunehmen.

Das **„Amerikanische Gas-Licht-Journal"** ist auf dem diesseitigen Continent das einzige Blatt, welches diesen Interessen gewidmet ist. Personen, welche auf dasselbe zu abonniren oder Anzeigen in dasselbe einzurücken wünschen, belieben ihre Adressen sammt Skizzen von Apparaten an uns direkt zu übermitteln und mögen sich versichert halten, daß dieselben in treuer Uebersetzung und mit sorgfältiger Zeichnung begleitet in unseren Spalten zum Abdruck gelangen werden.

Es besteht der Gebrauch im Verkehre mit unseren Englischen Freunden, die Anzeigen derselben zu inseriren und sie alsdann nach dem Spaltenraum zu berechnen; bei dieser Verfahrungsweise ist uns bis jetzt noch kein Fall von Unzufriedenheit kund geworden. Wir laden unsere verehrten Gönner in Deutschland und Frankreich ergebenst ein, uns ihr Vertrauen zuzuwenden.

Adresse:

Messieurs JOHN B. MURRAY & CO.,
Proprietors of the "American Gas Light Journal,"
No. 40 Wall Street, New York City.

THE PUBLIC HEALTH.

WE abandon this mythical appellation, and assume what we meant—the system of sewerage as a sanitary improvement. Medically speaking, public health is defunct. There is no such thing in America as public, and very little private, health. We are a wan, pale, haggard, sickly people. Born in a hurry, bred in a hurry, we eat, drink, sleep, talk, and work in a hurry, and our mortality tables show that we die in a hurry. We therefore consign the public health to the doctors, and a good time may they have with it.

THE WRONGS OF GAS-CONSUMERS.

THE demand for the September number of the AMERICAN GAS-LIGHT JOURNAL, containing the article on the Wrongs of Gas-Consumers, was so great that we were obliged to issue immediately a second edition, which was also soon exhausted, and we had orders for more copies, but, unfortunately, our forms had been distributed before we could issue a third edition. We shall probably reprint the article in a future number, when we will present the matter in a still clearer light to companies and consumers.

THE SCARLET LETTER!

GAS-COMPANIES and others whose wrappers on this number of the AMERICAN GAS-LIGHT JOURNAL are addressed in *red ink*, will understand it as a delicate hint that a remittance of three dollars by mail is necessary to constitute them subscribers. We have no collecting agents, and will feel obliged by prompt remittances,

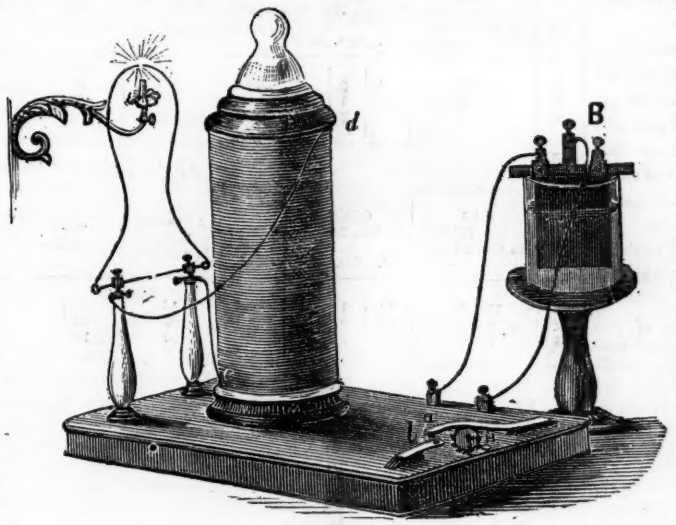
GAS-LIGHTING BY ELECTRICITY.

Among the most brilliant of electrical experiments in lectures fifteen years ago was the ignition of ether, gases, and the explosion of the gunpowder house. To produce these effects was the climax of the lecturer's skill, and his grand battery of Leyden jars was brought to bear upon the point where the conflagration was to take place. So small an effect from such great preparations did not indicate that any practical use could be made of the phenomena. Experiments with galvanic batteries, best calculated to show the great power of electricity, are, perhaps, the melting of refractory metals that have resisted the intensest heat of the furnace, and this by an electrical current that, passing through the human frame, would not be felt. "*Cui bono*" is ever the question with us. After witnessing brilliant experiments, we wish to know how they may be utilized. A few years ago the idea of making the apparatus used in those experiments, the means of a practical domestic gas-lighting would not be suggested, because the elements employed seemed so disproportioned to the end to be produced. Step by step improvements in our knowledge and the instruments—the means have been made more proportioned to the end. The electrical fluid has been brought under control. The old battery of Leyden jars has been set aside for the beautiful apparatus to be presently described, and which exceeds it in power, efficiency, and certainly as the rifled cannon of modern warfare exceeds the old smooth bores. Two plans for lighting gas by electricity have been used. These two plans employ the agent electricity in two of its phases or developments as unlike as possible, these are "dynamical," or "quantity" electricity; and "statical," "frictional," or "intensity" electricity. Though by some thought to be distinct essences, modern research has produced one form from apparatus intended to develope the other. To understand the apparatus employed, and the theory of electrical gas-lighting, a few explanations of technicalities must be excused. The terms "quantity" and "intensity" are not always understood. It is convenient to consider electricity as a *fluid*. The analogy is good. Quantity-electricity is like the gently flowing river carrying immense freight on its bosom—a reservoir of power. Electricity of intensity is like the mountain torrent dashing violently and noisily through obstacles, yet insignificant in volume. Sometimes the two qualities exist in one electrical effect, as when the thunderbolt tears irresistibly through all obstacles, burning, melting, shivering, destroying. Quantity-electricity is produced by galvanic batteries. In these a chemical decomposition takes place, and as this is more or less vigorous, so is the electrical effect. The quantity produced is proportioned to the size of the metal plates. These quantity effects are plating, fusing metals, &c. Intensity in the battery is that quality it has of overcoming obstacles or resistance in the conductors used to carry the current. Intensity is obtained by adding to the number of cells in a battery. This addition does not, however, increase the quantity. Where the power of one cell would not perceptibly affect instruments at short distances from it, by adding to the number of cells the current may be driven through hundreds of miles. Electricity is capable of

acquiring much greater intensity than any multiplication of battery-members can give it. Electrical gas-lighting makes use of the fluid in its quantity development, and also in its state of highest intensity. The arrangements are very different, yet in each case the fluid speeds through its conductor till it reaches the very point where its action is to be developed; here it either causes a fiery glow in a thread of fine platina wire, or flashes in a brilliant spark, illuminating the jet of gas thrown in upon it. To describe the first method more in detail: the engraving on the next page, in illustration of this article, represents at B a simple form of galvanic battery. It is immersed in its glass cell of dilute acid. Wires (or conductors) lead from the two different metals. Bring these wires together so that they almost touch. By laying a piece of fine platina wire across this space, so that it touches the two conductors, the fine wire will become hot, red hot, or it will melt according to the quantity the battery has. The red heat of platina is equal to the white heat of some other metals. Inflammable gases are easily fired in contact with this hot wire. If we increase the length of the wire, we cannot produce much heat. There is not enough power or intensity in this one cell to overcome the resistance this fine wire (a poor conductor) exerts. The number of cups is increased, the element intensity is brought to bear on the wire, resistance is overcome, it glows through its entire length. Having made our battery strong enough to ignite any desired length of platina wire, we now divide this long piece into a great number of short pieces, interposing a good conductor between the divided pieces. Now by the use of the same battery power we shall have a large number of fine wires simultaneously heated. Place each of these short pieces over a gas-burner, and we may light any number we please. Practically, a galvanic battery of sufficient power, made so as to last a long time without renewal, is set up; a copper wire, well insulated, leads from one end of this battery to the first burner, here the fine wire is inserted, the large wire passes on to the second burner, to be again replaced by the fine wire, and thus to the last burner, whence the large wire passes to the other end of the battery. The fluid from the battery —by a mere touch of the finger— courses along the wire conductor till it reaches the platina obstructions, here its passage is resisted; and as a swift runinng stream suddenly walled up by a narrow chasm of cleft rock dashes impetuously through, only showing its power at this spot, so the electric fluid manifests itself only at these little resistance-spots by filling them with heat,and this so rapidly that a thousand burners may be illuminated as a flash of lightning. This plan of lighting is that of S. Gardiner, Jr., to whom two patents have been granted, one December 22d, 1857, wherein he claims, broadly, "turning on or shutting off inflammable gas by degrees, or gradually, through the agency of electricity, for such purposes as are described in his specifications."

The second, dated March 30th, 1858, wherein he claims, "placing a coil of platinum wire, or its equivalent, in the relative position to the jet of gas described, for the purpose of lighting the jet by electricity, and for re-igniting it when blown out under the circumstances, and for the purposes set forth." These two patents cover the subject. The method of turning on and off the gas by electricity is simple. An electro magnet is connected with the battery used for gas-lighting. This magnet is near the stop-cock used for turning on the gas; a simple mechanical arrangement so connects magnet and stop-cock that a few impulses from the battery revolve the cock. A "switch" is used to divert the current from the magnet to the illuminating circuit of wires. The inventor's house is fitted up to illustrate the plan in its different applications; in the door-casing are two small ivory knobs, or telegraph keys. Pressing one of these a few times and gas is admitted to the front parlor chandelier; then one pressure of a second key and the gas instantly lights; the same manipulation lights the chandelier of the adjoing room after a switch is turned. In each chandelier an indicator is so attached to the electro-magnetic stop-cock that the gas used, from one-eighth to full force is shown. In this lighting, the battery force is

first directed to admitting gas, then to lighting it. In the hall chandelier both operations are performed at the same moment. In the single light brackets, lighting is effected by a touch of an electric cord and tassel, suspended near by. By a modification of the above arrangement it is also contrived that the opening of a door or window shall effect the same as manipulating the two keys. A burglar might be surprised to find, thus, his entrance the signal of an unexpected illumination! The plan for lighting city lamps would be as follows: Proper conductors are led from a central office to each district which may include, say, 100 lamps; each lamp has an electro-magnetic stop-cock, each is moved simultaneously by one key at central office; an indicator here exhibits the amount of gas turned on, or the fact that the lamps are lit or extinguished. Each district would occupy a few seconds to light, and the battery power can then be switched on to a second and third district. Mr. Gardiner found that 1,500 burners in the U. S. Senate Chamber at Washington required three seconds to light, including turning on gas. The second method of gas-lighting requires a very different apparatus, and electricity in its highest state of intensity. The machine employed is known as the Ruhmkorff coil. Its inventor, Count Ruhmkorff, has been honored by the French Academy in an extraordinary manner. Herder, in England, and Ritchie, in America, improved the construction. It is a beautiful and wonderful instrument. Tremendous effects are produced from elements seemingly insignificant. This machine, with its accessories complete, are seen also in this engraving. A galvanic battery with large plates, but of low intensity; a "primary coil," a bundle of iron wires, and a "secondary" coil. The well known medical battery, with its long horizontal coil and its humming vibrator, is a simple model of the Ruhmkorff apparatus. In its center the bundle of iron wires is placed upright, surrounding these is the primary coil, this is a helix of large insulated copper wire of short length, it envelopes the iron wires. Through it circulates the current from the galvanic battery, and obedient to the laws of electro-magnetism when the fluid courses through it, the iron wires become magnetic. Now the primary coil is enveloped in gutta percha, a bell glass also covers it, separating it effectually from the secondary coil; this consists of exceedingly fine, long, and highly insulated copper wire, patiently, and skilfully wound, it envelopes and fits over the bell glass, just as the primary coil envelopes the iron wires. The two ends of this long coil c and d, are brought out and conducted to convenient stands to adjust their separation; the tooth wheel H, the metal straps on which it acts, and the points a and b are for the purpose of interrupting the flow of the current quickly. The revolution of the wheel causes the points to be violently sundered, and as quickly brought together again; through these points the battery current is made to pass. The parts being in order, we allow the current to circulate through the primary coil, we turn the little wheel, and quickly stop or continue the circulation; the iron wires are as suddenly magnetized and de-magnetized, and they act with wonderful power upon the secondary coil through all the intervening obstacles. A current of electricity is created in the fine wire so intense, that with a loud report and with a flash of forked lightning it leaps from one to the other of the fine wire termini. What effect this flash would have on the human body no one dares to say; a small animal is easily killed. The spark will jump at times twelve inches, hundreds of these flashes can be produced in one minute. To make this machine useful for gas-lighting we must contrive to break up this long spark into many smaller ones, and so arrange our conductors that one of these small sparks shall be brought out over each one of the burners. The quality of intensity exists in this current to an eminent degree; its quantity is small. So intense is it that many things that are non-conductors to the battery current are good conductors for this. To prevent it from escaping from its conductors the greatest precautions have to be observed, and the highest known insulation used; the small amount of material expended for the effect produced is remarkable. From the destruction of a few grains of zinc a thousand sparks may be made, and these properly divided might light 100,000 burners. The application of the Ruhmkorff coil to gas-lighting is claimed by Mr. Archilaus Wilson, in a patent of recent date, the claims of which are set forth in the last number of the AMERICAN GAS-LIGHT JOURNAL.



OUR GAS-DISTRICT.

EVERY gas-light company has a "district," through which it is authorized by charter to lay its mains. We have ours, and we intend to light it from farthermost point to farthermost point—north, south, east, and west, throughout this broad continent.

No space nor distance shall limit our plans. The day for boundaries to enterprise has gone forever, at least in this New World, where the Alleghanies have become mere turnpike roads for pleasure parties seeking pretty landscapes thousands of miles in area, and the seas carriers of two and three thousand-ton pleasure yachts. The "district" of the AMERICAN GAS-LIGHT JOURNAL is universal.

Twenty-nine thousand post-towns on this continent are the present district which we propose to illuminate with the rays of scientific light emanating from the brilliant staff whose names adorn our pages; of these 29,000 post-towns, most of which are in regular receipt of news through the emissaries of the daily press, perhaps two-thirds—say, twenty thousand—possess each a population of at least one thousand industrious, intelligent people. These communities are inventive, energetic, generally thrifty, utilitarian, almost universally successful, and, in their views of things, liberal. In all of the necessaries, and in many of the superfluities of life, they abound; but of one luxury—that of gas-light—they are, to a great extent, deprived. Out of these 29,000 post-towns on the American continent proper, we have been able to trace as yet but 297 supplied with that, to us indispensable blessing. Read our tables. We apprehend there may be some unrecorded, still the grand aggregate cannot exceed, at the outside, 400—*but two per cent. of the* 20,000 *cities, towns, and villages which we feel safe in saying, count over* 1,000 *population ! ! ! !* And it must be borne in mind that from these benighted places, restless men and women are incessantly traveling into the more favored regions, where the blessing of gas-light is possessed and appreciated. Not one of these hundred thousand travelers returns to his sombre home without observing and deprecating the odds of comfort against him, and it requires but a hint to set him about securing an equilibrium of enjoyment.

We never saw a full-blown Yankee willing to travel second-class. No matter whether it be on an Illinois-Central or a Northern-New York, train—the one heading for a smash-up on the prairies, or the other sure to pitch through the next rotten bridge (a pleasantry of Northern-New-York travel); nor whether it be on a floating palace, bound to the metropolis, or to Newport, or the Branch, or at the "St. Nicholas," the "Fifth Avenue," the "United States," or the "Ocean"; we say, a Yankee, fully developed, especially if accompanied by his "folks,"—*anglice* wife and daughters,—is sure to travel first-class, all through.

Applying this to the detail of home life, it includes the luxury of gas-light; what others possess he wants, and you have only to suggest to him that in the next town there are gas-works being erected, and he'll be *darned* if he don't have the gas lighted in his town before the retorts are set in his neighbor's. *And he will do it.* This is homely language, but it is a true symbol of the American character, and it accounts for many idiosyncracies, and not a few extravagancies, that *stick out* in inconsistent places. Since the establishment of the AMERICAN GAS-LIGHT JOURNAL—but three months to-day—we have heard from several prominent builders of gas-works, and gas-fitters, whose names appear in our advertising columns, of a large and steady increase of orders, greater than they have hitherto known, and the enterprise has already acquired a momentum, stimulated by the publication of the AMERICAN GAS-LIGHT JOURNAL, which, as we said in a previous number, will not be checked until the entire inhabited part of this continent, from the Gulf of St. Lawrence and the North Atlantic Ocean, on the north and east, traversing three thousand miles in extent, rounding the Gulf of Mexico, Carribean Sea, and South Atlantic, on the extreme of South America, and passing up six thousand miles, to the Washington Territory on the far northwest, shall be lighted with gas. What a future is before our gas-fitters, our retort-makers, tubers, meter-makers, the coal miners of this country and of Old England, and the thousand and one purveyors of gas-apparatus generally! And why not? Wherever light is used, the best and cheapest will be had. The cost of importation and manufacture of whale oil for lighting purposes, has been long since abandoned. The finer productions—of candles—are to be found now only as an adornment of, and a feeble auxiliary to, gas. Burning fluids—those infamous inventions of avaricious men, more dangerous, subtile, and destructive than even gunpowder, because received under the guise of a household necessity—are being gradually, and should be universally and at once, condemned and abandoned; the essential products of oil and grease are inconsiderable in their illuminating power, and there remains but the carburetted-hydrogen, of all known illuminating agents, to meet the great human need. It is this welcome substitute that we are pledged to advocate, and we shall do it with all the energy and means which science and the press place within our reach; the more cheerfully because we are met by such generous support from those whom our feeble efforts interest.

In a few weeks we hope to present our pages under our own gas-lights—in other words, under a new vignette, which, when finished, will combine with all known instruments of producing, purifying, supplying, and measuring light, two of its public dispensers, a gas-lamp post, at either end. We are now only in our introductory specimen numbers, which we are sending broadcast over this and the various countries of Europe—"laying our mains," in order to plant those lamp-posts of ours at every point in the district which we have bounded; so that whoever beholds their symbolic rays may hold in his hand a number of the AMERICAN GAS-LIGHT JOURNAL to be read beneath them. We shall strive to make our JOURNAL a popular paper, to be sought after and read by the people, rather than a heavy scientific mass to lie with leaves uncut until the binder consigns them between two rigid boards to perpetual oblivion. We have a great work to perform, viz.: to suggest, advise, and encourage the universal use of gas as the ONLY LIGHT which can satisfy man while deprived of heaven's own sunny rays. To accomplish this we intend to place in every box in every post-office in the United States, and in the British Provinces, in South America, Central America, and Mexico, a copy of the AMERICAN GAS-LIGHT JOURNAL, that those who will may know what we are doing, and what they may do, to obtain the cheapest, best, and a permanent light. We have ascertained as nearly as is possible, that there are in the United States alone about 300,000 post-office boxes. We are beginning with the larger cities—having supplied Philadelphia with our September number, and now place 5,000 copies of this issue in the New York city post-office, besides distributing perhaps 20,000 copies to visitors from all parts of the Union at the American Institute Fair now being held here.

We intend to print an extra edition of about 10,000 copies a month hereafter, which, with our regular subscription, will be as many as we can manage with our present force. Arrangements are in progress, however, which will enable us to throw off editions of 50,000 copies with ease, as soon as we procure new type and large presses, which we hope to compass before the new year is inaugurated.

A glance at our advertising pages will show that we are not going backward at all events, and *our increasing subscriptions are all that we desire, in ratio;* but as to numbers, we are not quite yet prepared to cry—*Hold, enough!*

Our gas-district is, then, defined. Every subscriber lights a burner for us. May we not ask for a general illumination?

THE USE AND VALUE OF COAL TAR.

A Pennsylvania company inquires of us—

What use do gas-companies make of coal tar?
What proportion of gas does it contain to the pound?
What is the cost of extracting gas from it?
Some of the companies allow it to pass off as water, but would it not pay to put it to some practical use?

This subject is becoming a puzzle to many companies, and we have taken measures to ascertain to what use it is put in some of the interior towns.

The Danbury (Conn.) Company writes us that they mix it with saw-dust, and shovel it into the retorts, the same as coal, and get from every thirty gallons of tar 300 feet of gas, of a better quality than coal gas, and that it takes but three hours to each charge, so that they get the gas from two charges of tar in the same time that they do one from coal. This is of advantage to small works, where there is no sale for the tar.

The New York city gas-companies sell their coal tar to a manufacturer of patent roofing. Their production is not equal to the demand.

Other correspondents differ as to the value of gas made from coal tar. An intelligent and practical gas-maker says that the amount of *permanent* gas produced from a pound of coal tar is scarcely appreciable, and would by no means pay for the fuel used for its generation. Many years ago, he says, it was tried in Europe and this country, but abandoned entirely as a worthless process; it is possible, of course, to convert coal tar into a gas, but when the temperature is reduced to that of the atmosphere, that which *was* a gas *is now* a liquid, which, if sent into pipes, causes great trouble, by stopping up the bends and angles. He adds that the idea of distilling coal tar to make illuminating gas is suggested every year by some one who thinks he has found the philosopher's stone. There is no doubt that some coals are carbonized at such unprofitably low heats as to cause a large deposit of hydro-carbon matter which might be converted into gas—as, for instance, the distillation of coal oils would prove that the quantity and quality of condensed matter depend greatly upon the heat used in carbonizing. For gas-making, the heats employed are about 1,500° F.; for oil-making, very much lower—scarcely a dull red color to the retort.

For the American Gas-Light Journal.

The accumulation of coal tar at the various gas manufacturing establishments throughout the country, is of such an amount as to put the ingenuity of those having it in charge to the test, to know what to do with it. But a few years since, and the demand could not be supplied; now it has become a drug in the market—no one wanting to purchase.

The corporate authorities of cities and towns are taking the subject in hand, prohibiting the emptying of it into streams convenient to works—its mixture with the water preventing cattle from drinking, as well as rendering it unfit for domestic and culinary purposes.

Is there no plan that can be devised to make the article of coal tar useful, in its application to some purpose, by which the whole or part of it might be used—or destroyed, that it may not become a nuisance to the neighborhood?

I trust that this article will be the means of eliciting from some of your correspondents such suggestions respecting the tar as will, in the end, result in something useful. Enquirer.

Zanesville, O., Sept. 2, 1859.

For the American Gas-Light Journal.

ON THE PRESERVATION OF WROUGHT IRON SERVICE PIPE.

Wrought iron pipe, when placed in the ground without any protection, is found to decay rapidly. The probable average duration in this city is eight or ten years.

To endeavor to prevent this rapid oxydation we have adopted the following plan of coating the pipe internally and externally with prepared coal-tar. The tar is prepared by boiling forty gallons with half a peck of quick-lime, to free the tar from any properties injurious to iron. The pipe is placed in an oven, in quantities, and heated to a degree that will not burn the tar, but if any hotter, would do so. It is then immersed in a vat containing the prepared tar, convenient to the oven, and immediately taken out and placed in an inclined position to drain off any superfluous tar. When cool, the pipe is completely coated with a fine black lacquer.

In preparing and putting in the service, a portion of the lacquer may be taken off by the abrasion of the tools; the workmen re-coat these parts with a brush after the service is laid.

We have practiced this plan about two years. The services are as bright and free from decay as when first laid, and believe that the preparation will double the time of duration of the pipe. Two men can lacquer 5,000 feet of pipe in two hours. The same process is useful for coating cast-iron lamps and other articles.

R. G. C.

Louisville Gas Works, Sept. 19th, 1859.

CANNEL and COAL

OF THE BEST DESCRIPTIONS

FOR MAKING GAS AND COKE.

ANALYSES OF CANNEL,

Showing, from the most recent tests, the productive power (in volume) of each kind of material.

No.	GAS. Per ton, 2240 lbs. In Cubic Feet. At 60° temperature.	COKE. Per ton, 2240 lbs. Cwt.	Qrs.	Lbs.	Quality of Coke.	Ammonia Water in Gallons.	Tar in Gallons.	Illuminating power * per burner consuming 5 feet Gas per hour.	Price per ton free on board vessels in Liverpool	Price at $4.80 per £ sterling.
1	11,700	13	2	7	Good.	16	19	22.50	17s.	$4.08
2	11,000	13	1	16	"	18	16¼	21.25	15s. 6d.	3.72
3	10,000	11	2	0	Inferior.	25	15¼	20.00	14s.	3.36

ANALYSES OF COAL.

No.	GAS Per ton, 2240 lbs. In Cubic Feet.	COKE. Per ton, 2240 lbs. Cwt.	Qrs.	Lbs.	Quality of Coke.	Ammonia Water in Gallons.	Tar in Gallons.	Illuminating power * per burner consuming 5 feet Gas per hour.	Price per ton free on board vessels in Liverpool.	Price at $4.80 per £ sterling.
1	11,000	13	1	16	Good.	16	11¼	14.00	11s. 6d.	$2.76
2	9,690	13	3	0	"	27	10	10.40	9s. 6d.	2.28
3	9,300	13	2	0	"	24	12	9.80	8s. 6d.	2.04

* Equal to Spermacetti Candles, burning 120 grs. per hour.

The above analyses embrace the best Cannel and Coal raised in the Lancashire, &c., districts, and are tabulated, for safety, rather below the average results. They are large, well screened, and free from dirt when delivered on board vessels, and are used for gas purposes at the chief gas works in England and on the Continent.

Orders for less than 50 tons, (*i. e.*, a boat load,) will be charged the cost of carting, viz., 1s. 6d. per ton.

The prices quoted will in all cases be subject to such alterations, more or less, as the case may be, as may arise in the market between the issue of this offer and the time at which the order may come to hand.

Terms:—Cash, on presentation of the bills of lading at your bankers or agents in Liverpool, or as may be otherwise arranged, less 2½ per cent. discount.

Also, HAND PICKED CANNEL and COAL, for house use.

Concessions in prices made for large quantities.

GAS APPARATUS of all descriptions and on the most approved principles. Also, Purifying and other materials supplied.

ANALYSES, PLANS, and ESTIMATES, and other information required, and the highest references, furnished on application.

Contracts for materials and works entered into. No charge made for superintending shipments, preparing bills of lading, or passing entries.

EMANUEL TURNER & CO.,

Export Offices, 34 Castle street, Liverpool, England.

BY ROYAL LETTERS PATENT.

GEORGE ANDERSON,

GAS ENGINEERING OFFICES,

104 Leadenhall Street, London, E. C.,

PATENTEE OF THE DIRECT ACTING PISTON EXHAUSTER, &c.,

Begs to draw the attention of the Engineers and Managers of American Gas-Works to his Patent Purifying, Changing or By-pass and Shut-off Valve.

Cowen's Patent Fire-Clay Retorts.

JOSEPH COWEN & CO.,
Bladen Burn, near Newcastle-on-Tyne,
ENGLAND,

Were the only parties to whom a Prize Medal was awarded at the Great Exhibition in London in 1851, for "Gas Retorts and other objects in Fire-Clay."

J. C. & Co. have been for many years the most extensive manufacturers of Fire-Clay Retorts in the United Kingdom of Great Britain and Ireland; and orders for Fire-Clay Retorts of all shapes and dimensions, Fire Bricks, and every other article in Fire-Clay, are promptly executed at their works as above.

Cowen's Garesfield Coal and Coke.

Coal and Coke Office, *Quay Side, Newcastle-on-Tyne.*

WILLIAM RYDER,

GENERAL MINERAL and METAL AGENT and Merchant,

4 DEAN ST., NEWCASTLE-ON-TYNE,
ENGLAND,

Is prepared to supply Gas Companies and others with every variety of appliance for the production and supply of Gas, including Gasometers, Retorts (metal and clay), Fire Bricks, Coals, Metal Mains, Tubes, in wrought iron, copper, brass, lead or composition, Meter Tops, Fittings, &c., &c., and from his extensive experience in this class of work, can guarantee everything of the best description.

BENJAMIN PIKE & SONS,

OPTICIANS,

IMPORTERS AND MANUFACTURERS OF

Mathematical and Philosophical Instruments,

No. 518 BROADWAY,

OPPOSITE ST. NICHOLAS HOTEL,

DANIEL PIKE, GARDINER PIKE. } *NEW YORK.*

Gold, Silver and Steel Spectacles; Barometers, Thermometers, Surveying Compasses, Theodolites, Levelling Instruments, Opera Glasses, Telescopes and Microscopes; Air Pumps and Electrical Machines. Instruments and Spectacles repaired. Periscopic Glasses and Pebbles.

JAMES R. CHILTON, M. D.,

PRACTICAL CHEMIST,

No. 93 PRINCE ST., cor. MERCER ST.

(A few doors from Broadway,) **New York.**

Chemical Substances, Minerals, &c., constantly on hand. Commercial Articles, &c. Chemical and Philosophical Apparatus, Particular attention paid to the Analysis of Ores, Mineral Waters,

BRADBURY M. JOHNSON,

GAS FITTER AND PLUMBER,

No. 111 East Eighteenth St., New York.

A large and elegant assortment of Chandeliers, Brackets, &c. Gas Pipe and Posts made for Gas Companies on favorable terms.

GAS-LIGHT SHARES FOR SALE

In several prominent City Companies, paying 8, 10 and 12 per cent. dividends.

JOHN B. MURRAY & CO., Bankers,
No. 40 Wall street, New York City.

D. APPLETON & CO.,

IMPORTERS AND DEALERS IN

AMERICAN AND FOREIGN BOOKS,

Publishers of APPLETON'S RAILWAY GUIDE, and of APPLETON'S DICTIONARY OF MECHANICS.

A work indispensable to all engaged in the manufacture of Gas.

346 BROADWAY, NEW YORK.

Gas Exhausters.

GEORGE WRIGHT & CO., LIVERPOOL.

T. W. PARMELE, Sole Agent.

No. 4 Irving Place, New York.

C. R. WOODWORTH,

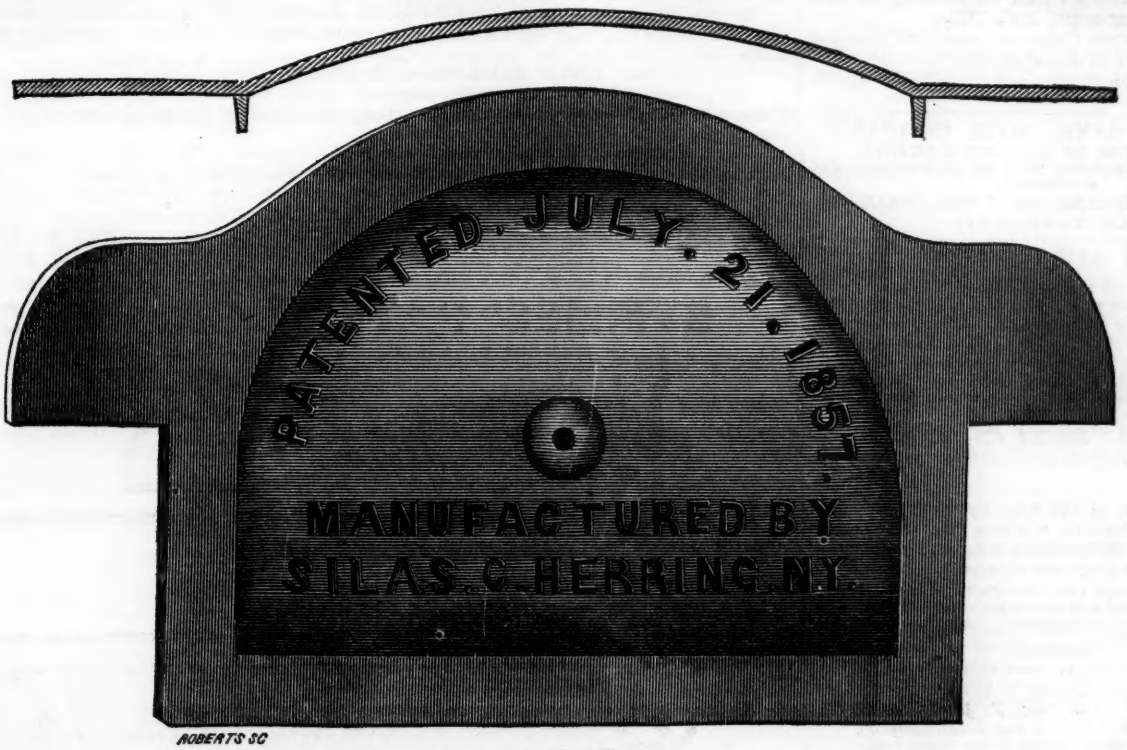
MANUFACTURER OF

PORTABLE GAS WORKS,

No. 1 Cedar St., (near Pearl St.) N. Y. City.

FLOYD'S PATENT
MALLEABLE IRON RETORT COVERS.

Patented, July 21st, 1857.



The above cut represents the MALLEABLE IRON RETORT COVER. It is made only a quarter of an inch thick, and convexed as shown in the sectional view which gives it great strength. We make this cover of any required shape—the patent allowing us to adopt any form the taste of those using them may suggest. We have, in the above form, secured lightness and strength combined, and where there is no objection to it, this shape is preferable to any other.

The peculiar advantages of this invention are economy, durability and convenience, all of which are, upon the slightest examination, apparent to all who are familiar with the manufacture of Gas, or any article requiring the use of Retorts. This Cover is made of a very superior kind of malleable iron, being stronger and much better than wrought iron, and consequently of unlimited durability. It is less than half the weight of the cast iron Cover, such as have been in universal use, and its adoption is therefore a saving of labor in the Retort House. We give extracts from a few of the many letters received from those who have thi Cover in use, including some of the largest Gas Manufacturing Companies in the United States:

OFFICE MANHATTAN GAS-LIGHT CO.,
No. 4 Irving Place, N. Y.

FLOYD'S PATENT MALLEABLE IRON RETORT COVERS far excel any article for a similar purpose heretofore in use. The durability of this Cover is much greater than those made from ordinary cast iron. Indeed, I can put no limit to the length of time they may be rendered serviceable.

(Signed,) JOS. A. SABBATON,
Eng. M. G. L. Co.

OFFICE NEW YORK GAS-LIGHT CO.,
No. 174 Centre street, N. Y.

From the experiments made with a few of FLOYD'S PATENT MALLEABLE IRON RETORT COVERS at these Works, I believe the entire use of them at the price charged would in the end be a saving to Gas Companies, as they cannot, even by careless usage, be broken.

JNO. MOWTON,
Manager.

BROOKLYN GAS WORKS,
May 14, 1859.

Messrs. HERRING & Co., Gentlemen,—Yours of the 13th is at hand, and contents noted. We have used your patent Retort Lids for about eighteen months, and are well satisfied with their superiority over all other kinds in use.

Yours, truly, J. K. BRICK,
Engineer of the Brooklyn Gas-Light Co.

OFFICE PHILADELPHIA GAS WORKS,
Market and 23d sts., Philadelphia.

After eleven months' trial of FLOYD'S PATENT MALLEABLE IRON RETORT COVERS, I find them to be in every respect satisfactory, and much preferable to cast iron covers of greater weight.

JNO. C. CRESSON,
Eng. Phila. Gas Works.

OFFICE ALBANY GAS-LIGHT CO.,
Albany, N. Y.

The advantages of FLOYD'S PATENT MALLEABLE IRON RETORT COVERS are great. They weigh much less than cast iron covers, and this is a considerable matter to the men who have to lift them as high as their heads, as in the case in the top Retort of five in a bench, and are more economical to any Gas Works, being less liable to breakage, which is a serious item of expense during the year.

(Signed,) PAUL A. SABBATON,
Supt. Albany G. L. Co.

OFFICE DETROIT GAS-LIGHT CO.,
Detroit, Mich.

* * * I am delighted with the working of FLOYD'S PATENT MALLEABLE IRON RETORT COVERS. Since their use we have not had a single "blow" of the luting, and consequently have lost no Gas using these Covers. I shall substitute these Covers as soon as the old ones are broken. I am not sure but it would be more profitable to throw our present cast iron ones away and purchase these. * *

P. E. DE MILL,
Sect'y D. G. L. Co.

Extract from the Report of THOS. H. WYNNE, *Superintendent of the* RICHMOND (VA.) GAS WORKS, *February* 28th, 1859.

"Feeling satisfied from my whole experience, that every facility which is afforded to working men in the performance of their duties, is an advantage to those who employ them, I have discarded the heavy old cast iron retort lids, weighing sixty pounds a-piece, and substituted those of malleable iron, made by S. C. Herring, of the Oregon Foundry, New York. These possess the important advantages of lightness, weighing only thirty pounds, and still greater of durability, it being next to impossible to break them by the hardest usage to which they are subjected. Their first cost is twice as much as the others, but as these are easily broken, there can be no question but that, in the end, the new lids will be the cheaper."

Gas Works requiring these "COVERS" can send a correct drawing of the mouth piece of their Retort, from which we can make the pattern, which will be charged at just its cost. The cost of the "COVERS" will invariably be *thirteen cents per pound*, delivered at any point in New York for shipment.

Orders for Covers received through Messrs. ELLIMAN BROTHERS, New York.
" " " " Mr. T. W. PARMELE, " "

HERRING, FLOYD & KIBBE, Sole Proprietors and Manufacturers.

740, 742 and 744 Greenwich street, New York.

Castings of every description for Gas Works, by Herring & Floyd, Oregon Iron Foundry, New York.

ALFRED F. JAMES.
Collection, Exchange and Land Agency,
GALVESTON, TEXAS.
REFERENCE:
John B. Murray & Co., New York.

GEORGE PARISH OGDEN,
Banking, Exchange, and Collecting House,
Troy, N. Y.
Northern and Eastern Collections made and remitted for on day of receipt.
Bills of £1 and upward for sale, payable throughout Great Britain.

AMERICAN BANK NOTE COMPANY.
CERTIFICATES OF GAS LIGHT SHARES and Bank Notes Engraved with the greatest skill and promptness.
MERCHANTS' EXCHANGE BUILDING, WALL ST.,
NEW YORK CITY.

MANHATTAN SAVINGS INSTITUTION,
No. 644 Broadway, New York.
Assets, January 1, 1859, $1.183,600.98.
Open daily from 9 A. M. to 7 P. M.
A. A. ALVORD, *Sec'y.* E. J. BROWN, *Pres't*

H. J. SEAMAN,
41 PINE STREET, (bet. Nassau and William,)
NEW YORK,
NOTE BROKER.
Foreign Exchange, Stocks and Bonds bought and sold.
GEO. C. HANCE.

SEYTON & WAINWRIGHT,
37 WILLIAM ST., NEW YORK CITY.
STOCK AND EXCHANGE BROKERS,
GENERAL RAILROAD AND EUROPEAN AGENTS.
Stocks and Bonds bought and sold at the Board of Brokers, and at private sale. Railroad and other loans negotiated, and collections made for home or European account. *Exchange on London.*
C. S. SEYTON. J. H. WAINWRIGHT.
REFERENCES.
Duncan Sherman & Co., N. Y. — Peter Wainwright, Esq., Boston.
Richard Irvin & Co., " — Ogden, Fleetwood & Co. Chicago.
John B. Murray & Co., " — Erastus Corning, Esq., Albany.
Union Bank, " — Wm. Fisher & Son, Baltimore.
Webster Bank, Boston. — J. P. Kilbreth, Cincinnati.
E. F. Satterthwaite, London. — Geo. Parish Ogden, Troy.
Alfred F. James.

E. A. COEN,
Engineer and Contractor for Coal Gas Works.
Plans and specifications furnished and Works erected for cities, towns, and villages. Rosin Works altered and repaired. Pipe, &c., furnished and laid for Water and Gas,
E. A. COEN, Rondout, Ulster Co., N Y.

WM. L. SCHOENER & CO.,
ENGINEERS AND CONTRACTORS,
For the erection of COAL GAS WORKS.
GEORGE DWIGHT, H. A. CHAPIN, WM. L. SCHOENER.
REFERENCES:

Springfield Gas-Works,		Mass.	Thompsonville Gas-Works,		Ct.
Milford	"	"	New Britain	"	"
Clinton	"	"	Norwalk	"	"
Beverly	"	"	Norwich	"	"
Ware	"	"	Tarrytown	"	N. Y.
Glasgow Mills,		"	Clyde	"	"

Wheeler & Wilson Works, Bridgeport, Ct.

STUART & PETERSON,
WILLOW STREET, ABOVE THIRTEENTH, PHILADELPHIA,
MANUFACTURERS OF
Lamp Posts and Cast Iron Street Lanterns.
P. S.—Our Cast Iron Lanterns are warranted to outlast three Tin Lanterns.

Gas Coal, Clay Retorts, Exhausters, &c.,
T. W. PARMELE,
No. 4 Irving Place, New York.

WHEELER & WILSON'S
SEWING MACHINES.
No. 505 BROADWAY, N. Y
The very best in use. Send for a Circular.

LADD, WEBSTER & CO.,
No. 500 Broadway, (opposite the St. Nicholas Hotel,)
Invite public attention to their IMPROVED TIGHT STITCH SEWING MACHINES, which for beauty of construction, elegance of finish, and perfectness in Sewing, are unequalled by any in the market.

LESTER'S SEWING MACHINES,
LOCK-STITCH,
Prices from $50 to $150.
No. 483 BROADWAY, NEW YORK.
Adapted to family use—doing light as well as heavy sewing.

THE WILLCOX & GIBBS'
FAMILY SEWING MACHINES,
The best family machine in the market.
Prices from $30 to $50.
504 BROADWAY, NEW YORK.

SINGER'S SEWING MACHINES.
New Styles—Prices Greatly Reduced.
No. 458 BROADWAY, N. Y.

GROVER & BAKER'S
CELEBRATED NOISELESS
SEWING MACHINES,
AT GREATLY REDUCED PRICES,
No. 495 BROADWAY, NEW YORK.

TO GAS COMPANIES, &c.

THE copartnership heretofore existing between A. ANGUS CROLL and THOMAS GLOVER, of London England, manufacturers of CROLL'S celebrated

"PATENT DRY GAS METERS,"

and trading under the style of THOMAS GLOVER, was dissolved on the 25th day of March, 1858.

By the terms of the deed of dissolution, the **American** and *all other* patents taken out by Mr. Croll in which Mr. Glover can claim any interest, past or future, whatever, have been released and assigned by Mr. Glover to Mr. Croll.

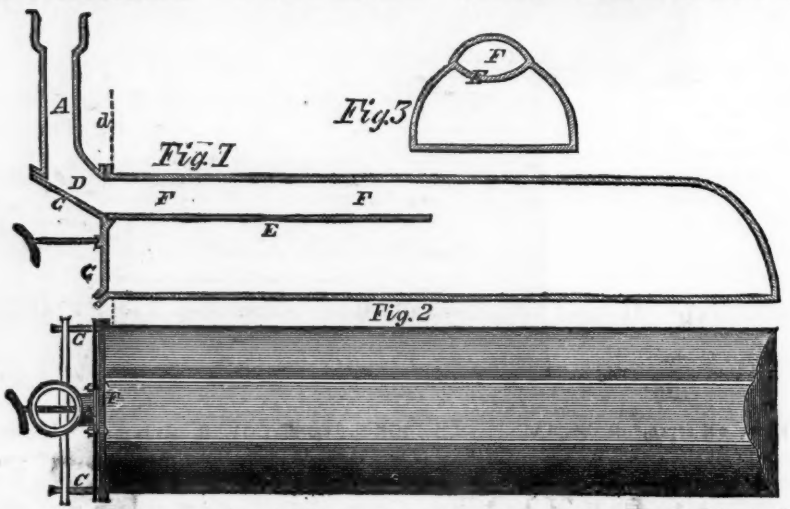
The American patent was re-issued October 5, 1858.

All persons, therefore, are hereby cautioned against purchasing *any* Dry Gas Meters **(especially Mr. Thomas Glover's as at present constructed)** which infringe Mr. Croll's patents; as the *maker, seller,* and USER thereof are all equally liable in damages.

The present Meter, with the improved valves, also patented by Mr. Croll, gives a **steady light, under all circumstances, is warranted to register correctly,** being **sealed as correct** by the Corporation Inspector of the city of London, England, and will also pass the New York State Inspection, and be duly sealed by the Inspector thereof, if required for that State.

JOHN O'NEIL,
99 State street, Boston, Sole Agent.

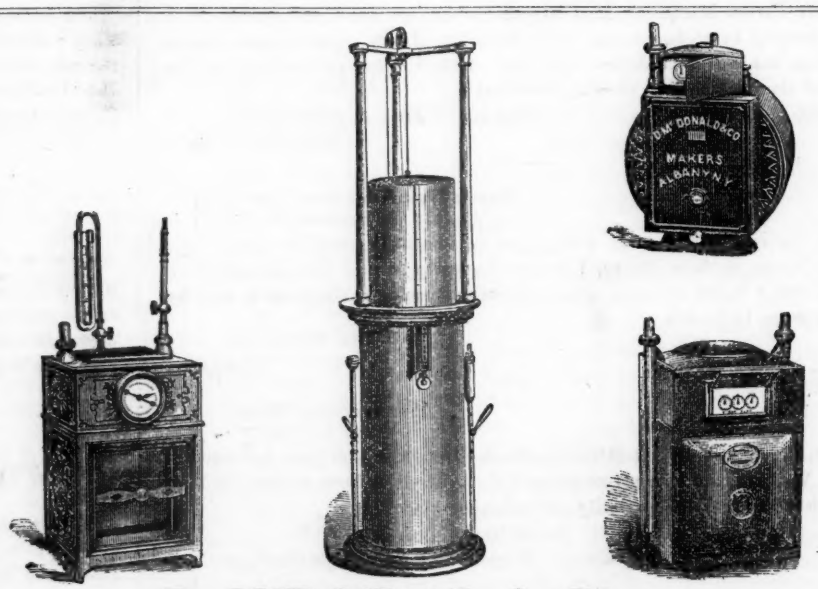
SYMMES' PATENT GAS RETORT.



THE above cut represents a new mode of connecting retorts to the "stand pipes" without using "mouth pieces," thus saving the drilling the flanges and making the joints, as well as some 250 lbs. of casting, and several bolts for each retort set. A narrow piece of the door C. closes the lower end of the stand-pipe. The plate E. is a separate piece, thinner than the retort, and may be secured to the door C., or slid over grooves made in the retort for that purpose. The retort is set in the ovens to the dotted line *d.* This mode of connecting may be applied to clay as well as iron retorts.

For information concerning the above, or for the castings, address

H. K. SYMMES, Newton, Mass.



D. McDONALD & CO.,

No. 51 LANCASTER STREET, ALBANY, N. Y.,

MANUFACTURERS OF

STATION METERS, WET METERS (WITH IRON OR TIN CASES), DRY METERS, FANCY, EXPERIMENTAL AND SHOW METERS, GAS-HOLDERS FOR TESTING PRESSURE GAUGES, &c.

We wish to call the attention of Gas-Light Companies, Gas Engineers, and all others who contemplate the purchase of Gas Meters, to the fact that we are now manufacturing, and prepared to fill all orders in the above line upon terms as favorable as any other manufacturers in the country.

Having improved, simplified, and so far perfected the mechanical construction of our Meters as to render them unquestionably equal, if not superior to any others now in use, we can confidently offer them to purchasers as such. The extreme simplicity of our Dry Meters renders their wear and liability to get out of order, less than any other meter in the Market.

First-class workmen only employed, and the best materials used. All work warranted.

☞ Meters sealed by the State Inspectors, according to the laws of New York.

MEDALS AWARDED TO THOMAS GLOVER'S PATENT DRY GAS-METERS.

MANUFACTORIES

SUFFOLK ST. CLERKENWELL-GREEN. & ALLEN ST. GOSWELL ST. LONDON.

THOMAS GLOVER introduced his PATENT DRY GAS METERS into the United States and Canadas in 1846, and since that time he has received extensive patronage from many Gas Companies of those countries as well as from this. Thomas Glover confines his sole attention to the business of Gas-Meter making. The propriety of his doing so is satisfactorily proved by his success. For example: one London Company has now in use above 12,500 of his Patent Dry Gas-Meters, and some of these Meters have been fixed for fourteen years and are still in working order, without complaint from either the company or the consumer.

THOMAS GLOVER thinks it necessary to put Gas Companies on their guard against parties selling Patent Dry Gas-Meters constructed in imitation of his, but unskilfully made on erroneous principles, and with improper and unsuitable materials.

THOMAS GLOVER'S Workshops are now the most extensive in this or any other country, and he is thereby enabled promptly to execute orders to any extent required. Purchasers may, at any time, inspect his Works and the materials of which his Meters are constructed

Suffolk Street, Clerkenwell, London, and 1 Barrett Street, Fulton Street, Boston.

Cliff's English Clay Retorts,
T. W. PARMELE, SOLE AGENT,
No. 4 Irving Place, New York.

DANIEL THOMPSON,
MACHINIST,
AND MANUFACTURER OF
Stop Cocks, Fire Plugs, &c., for Water Works, and Stop Cocks, Valves, Drip Pumps, &c., for Gas Works,
No. 133 Elfreth's Alley, Philadelphia.

T. G. ARNOLD,
MANUFACTURER OF
GAS BURNERS,
MERCURY CUPS, PORTABLE SOCKETS, BURNER PILLARS, &C.,
No. 447 BROOME STREET,
2d door West of Broadway, NEW YORK.
Imported Scotch Tips and Burner Plyers always on hand.

English Gas Coals.
GEORGE WRIGHT & CO., LIVERPOOL.
T. W. PARMELE, SOLE AGENT,
No. 4 Irving Place. New York.

Office for the Inspection of Gas Meters,
FOR THE STATE OF NEW YORK.

AGENT FOR
SCAMMON'S CELEBRATED GAS APPARATUS,
FOR EITHER COAL OR ROSIN GAS.
GAS FIXTURES OF ALL DESCRIPTIONS.
GAS FITTING.
GEORGE H. KITCHEN & CO.,
561 BROADWAY, NEW YORK.

NEW YORK GAS BURNER CO,
346 BROADWAY, ROOM 18, APPLETON'S Building,

Manufacture to order L. E. Hicks' Patent Gas Burner for Lighting Streets, Steamboats, Railroad Cars, Churches Theatres, Stores and Private Dwellings.

This burner has been subjected to every known test, of the justness of its claims in repeated instances, and by competent persons, and had the unqualified approval of the late Professor W. H. Ellet, chemist to the Manhattan Gas-Light Company, and of Mr. J. K. Brick, Superintendent of the Brooklyn Gas-Works. The experiments of these gentlemen prove that its "economy" over ordinary burners in the consumption of gas, for equal illuminating powers, is in the ratio of 232 to 100.

We think this array of authority at least entitles our new burner to a full and fair trial.

MANY, BALDWIN & MANY,
49 JOHN STREET, NEW YORK, AGENTS FOR Gautier's Clay Retorts, Fire and Arch Bricks, Gas-House Tiles, &c. Black Lead Crucibles for Steel Works and Brass Founders. Also, a full assortment of Tiles and general Hardware.

J. T. WELLINGS,
PLUMBER AND GAS-FITTER, No. 93 SOUTH Sixth street, Brooklyn, E. D.
Licensed to introduce Water into houses, &c.

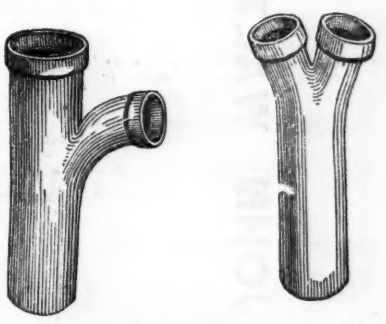
A. BRONSON,
PATTERN AND MODEL MAKER FOR THE AMERICAN GAS-LIGHT JOURNAL, No. 102 Elm street, corner of Walker street, New York.

FRD. C. KRAUSE,
MANUFACTURER OF PATENT GAS-BURNERS for Cooking, Ironing, Heating, Chemical Apparatus, &c., No. 772 Eighth avenue, corner of 54th street, New York.

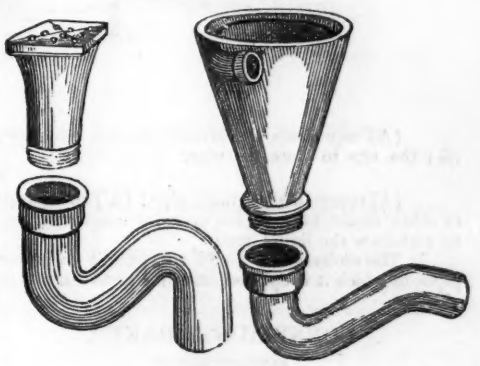
COAL FOR GAS-WORKS.
SAML. THOMPSON'S NEPHEW,
IMPORTER OF
ENGLISH, CANNEL & NEWCASTLE COAL
No. 63 PINE, 145 RIVINGTON, 149½ SEVENTH AVENUE,
45 GOLD STREET, NEW YORK.

NEW YORK FIRE-BRICK MANUFACTORY
Branch Works at Kreischerville, Staten Island.
B. KREISCHER & CO.,
Office, 56 Goerck St., cor. Delancy St., New York.
Gas House Tiles and Fire Bricks of all shapes and sizes. Fire Mortar, Clay, and Sand articles of every description made to order at the shortest notice.
B. KREISCHER, H. MAURER, A. WEBER.

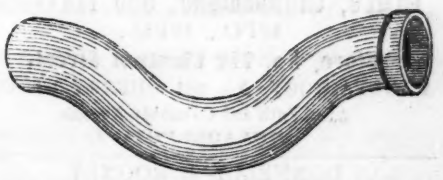
DRAIN PIPE.



WATER-CLOSET PANS.



TRAPS.



JAMES P. HAMMILL,
IMPORTER AND DEALER IN BEST ENGLISH FIRE BRICK, FLOOR, MALT, AND ROOFING TILES, DRAIN PIPE, GAS PIPE, &c.,
155 Water Street, - - - - New York City.

OFFICIAL.

New York State Inspector of Gas Meters,
OFFICE No. 561 BROADWAY.

Gas Meters proved since 4th May, 1859.	9168
Daily number proved, about.....	125
Number of proving apparatus tested.....	36

NEW YORK, Sept. 30, 1859.

GEORGE H. KITCHEN,
State Inspector.

THE AUBIN VILLAGE GAS WORKS

Are now building for the city of *San Antonio*, Texas, and for the following villages, viz.: *Greensboro'*, N. C.; *Dover*, Delaware; *Jersey Shore*, Penn.; *Flemington*, N. J.; *Bath*, Steuben Co., N. Y.; *Plattsburgh*, N. Y.; *Rutland*, Vt.; *Point Levi*, C. E., and *Gloversville*, N. Y., where they are being substituted for Rosin Gas Works.

Being adapted to any material containing gas, the AUBIN WORKS use as the gas-making material, cotton seed at the South, rosin in the Carolinas, cannel coal in Pennsylvania, and rosin and coal mixed in the Northern and Eastern States; and are so simple in construction and operation, that Gas-Companies, even in small towns, can make *a rich, and therefore cheap Gas*, and still pay dividends. Parties inquiring will be referred to towns of 3,000 to 4,000 inhabitants, using the Aubin Works, where the net earnings on the stock are from ten to fifteen per cent.

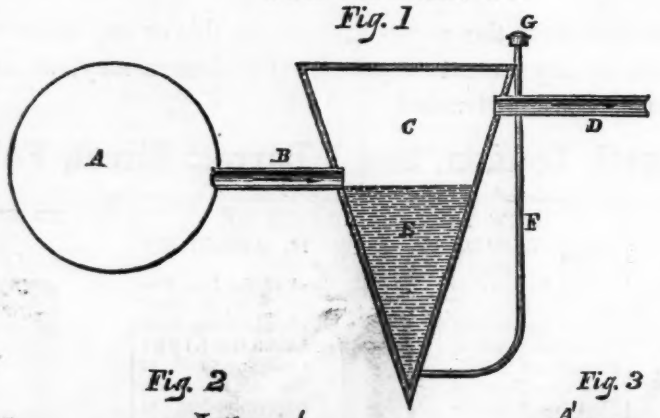
General Office of the AUBIN GAS-WORKS COMPANY,

44 State Street, Albany, New York.

TO PREVENT THE FREEZING OF GAS-PIPES.

FOR HOUSES, &C.

Fig. 1



JOHN WALTON'S PATENT.

Fig. 2

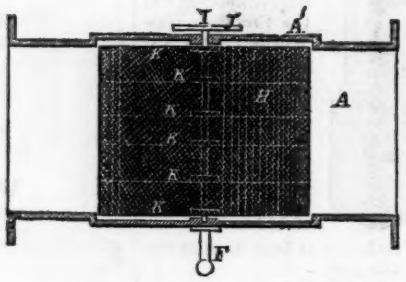
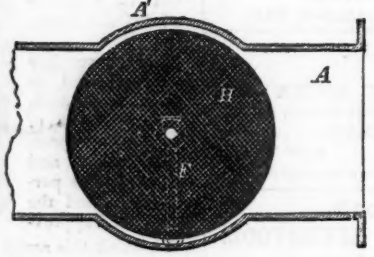


Fig. 3



FOR GAS WORKS.

FIGURE 1.—To be placed in the Street.

(A) represents the street; (B) the connecting pipe; (C) the vessel; (D) the service pipe; (E) the alcohol or other liquid; (F) the pipe used to fill the vessel; (G) the cap to close the pipe.

FIGURES 2 and 3.—To be placed on Main at Gas Works.

(A) represents the main pipe; (A') an enlargement thereof; (H) a wire gauze cylinder, which is rotated slowly; the lower port of the pipe is filled with alcohol or other liquid, keeping the cylinder constantly wet; (K K, &c.,) show simple disks within the wheel; (H) to increase the wetted surface; (F) is the pipe used to fill or withdraw the liquid used:

The undersigned would respectfully call the attention of Gas Companies to his improved ANTI-FREEZER, which he guarantees to prevent the freezing of all pipes to which it is applied, at a less cost than any other known process. Further information can be had by addressing—

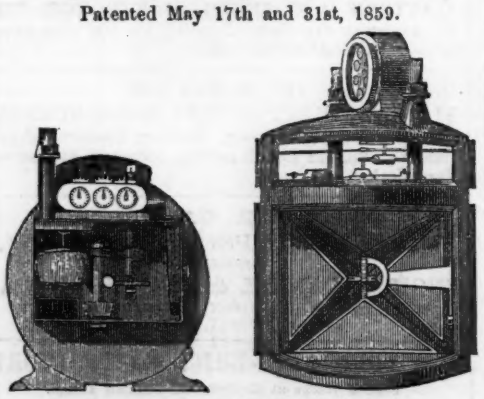
JOHN WALTON, Louisville, Ky.

CORNELIUS & BAKER,
MANUFACTURERS OF
LAMPS, CHANDELIERS, GAS-FIXTURES,
ETC., ETC.,
Store, No. 710 Chestnut Street.
MANUFACTORY, No. 821 CHERRY STREET.
Also, Fifth and Columbia Avenue,
PHILADELPHIA.

DONNELLY & ROONEY,
BRASS FOUNDERS,
144 *GRAND STREET, NEW YORK.*
Jobbing promptly attended to.

NEW YORK BELTING AND PACKING CO.
MANUFACTURERS UNDER GOODYEAR'S PATENT, OF
VULCANIZED RUBBER FABRICS,
ADAPTED TO MECHANICAL PURPOSES,
MACHINE BELTING, STEAM PACKING, HOSE, GAS FITTING, &c.
Nos. 37 and 38 Park Row, New York.
JOHN H. CHEEVER, *Treasurer.*

HARRIS & BROTHER'S
Improved Dry Gas-Meter,
Patented May 17th and 31st, 1859.



HARRIS & BROTHER,
MANUFACTURERS OF EVERY DESCRIPTION OF
GAS-METERS AND GAS-APPARATUS,
No. 1117 Cherry St., Philadelphia.

BRAMHALL, HEDGE & CO.,
442 BROADWAY, N. Y.,
OFFER FOR SALE
SHAW'S PATENT

Gas Cooking Stoves, 8 sizes,	Gas Hatters' Irons,
Gas Steak Broilers,	Gas Laundry Stoves,
Gas Smoothing Irons,	Gas Bath Room Stoves,
Gas Nurse Lamps,	Gas Heating Stoves,
Gas Bread Toasters,	Gas Oyster or Bird Roasters,
Miniature Gas Furnace,	Gas Ovens, 5 sizes.

CALL AND SEE THEM AT
442 Broadway, between Howard and Grand streets.

HARPER & O'CONNELL,
MANUFACTURERS OF
GAS SHADES AND GLOBES,
OF EVERY DESCRIPTION,
FRENCH COLORED GAS SHADES AND SMOKE BELLS,
Nos. 63 and 65 ELIZABETH STREET, corner HESTER, New York.

F. A. SABBATON,
Albany, N. Y.,
GAS ENGINEER AND CONTRACTOR.
COAL AND ROSIN WORKS
Of any capacity constructed on the most approved plans.
Refer to CHARLES ROOME, Esq., Prest. Man. Gas-Light Co., N. Y.
H. PUMPELLY, " " Albany, " "
J. K. BRICK, " Engineer Brooklyn Gas Co.

ELLIMAN BROTHERS,

COMMISSION MERCHANTS,

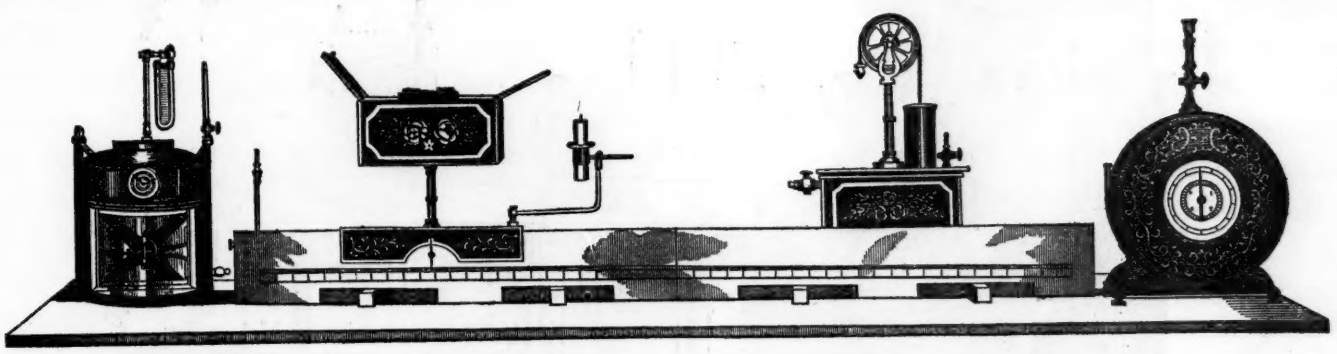
217 PEARL ST., NEW YORK.

IMPORTERS OF BELGIAN FIRE-CLAY GAS RETORTS,

AND

DEALERS IN TILES, ARCH-BRICKS, FURNACE DOORS, MOUTH-PIECES, COVERS, AND ALL OTHER FITTINGS, OF THE MOST APPROVED PATTERNS, FOR SETTING CLAY RETORTS.

Importers and Dealers in Wrought-Iron, Gas, Water and Steam Tubes.



PRESSURE REGISTERS,

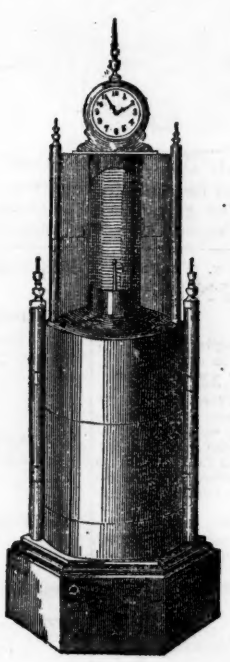
PRESSURE INDICATORS,

PRESSURE GAUGES,

PHOTOMETERS,

GOVERNORS,

STATION METERS,



CUSTOMER METERS,
(Wet and Dry.)

EXPERIMENTAL METERS,
(Wet and Dry.)

SHOW METERS,
(Wet and Dry.)

METER PROVERS,

CENTRE SEALS,

&c. &c. &c.

An experience of more than Twenty-two Years, during which time we have manufactured a larger number of Gas Meters than any other establishment in the world, gives us confidence in calling the attention of parties desiring a superior Meter, either wet or dry. All our meters are tested, separately, by a sworn Meter Inspector, and we guarantee to give satisfaction in every particular.

We desire to call attention to our *Station Meter*, having made two very important improvements, by which we obtain an increased measuring capacity of more than twenty per cent., and do away with the stuffing box at the end of the drum shaft.

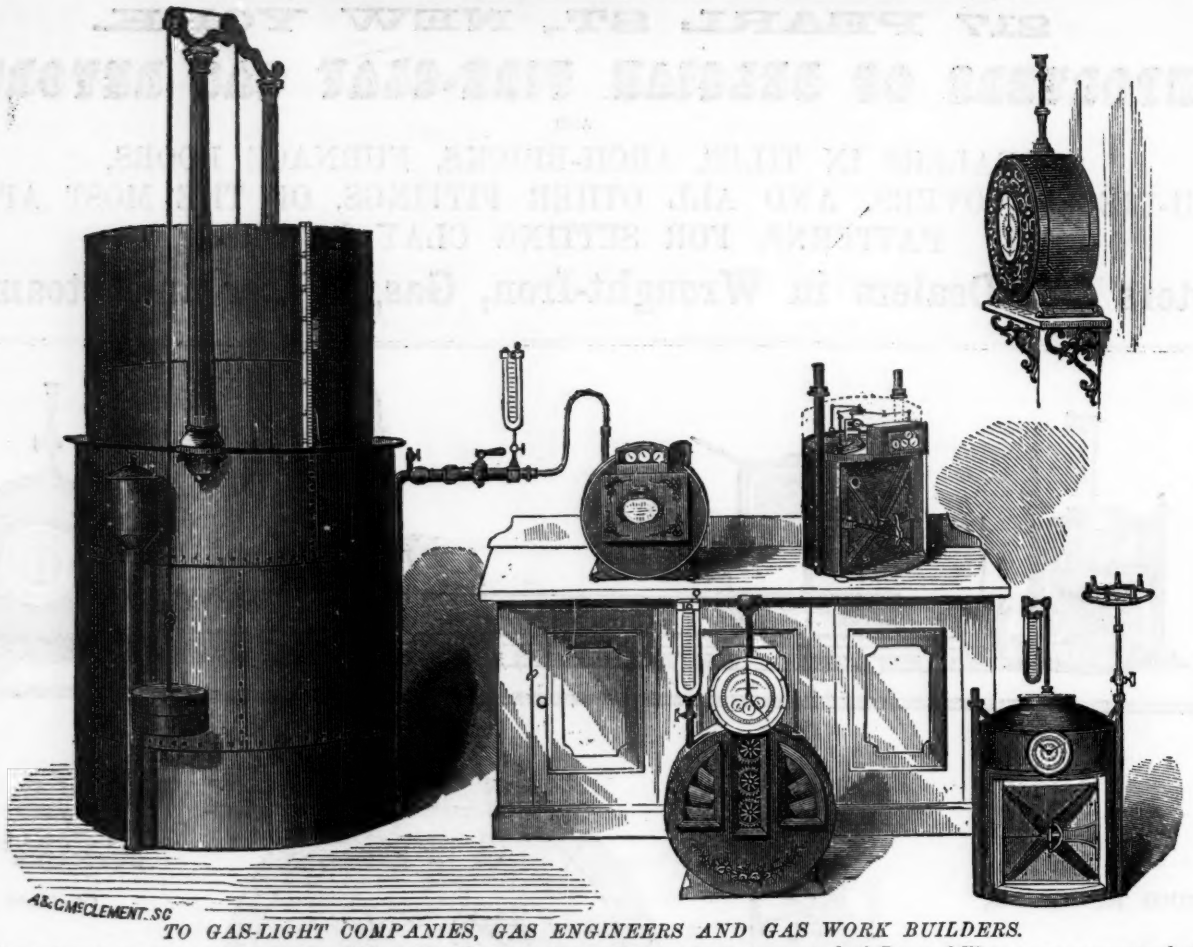
Our Patent Rotary Valve Dry Meter is used by more than *One hundred and seventy-five* Gas Companies in the United States, giving entire satisfaction. We therefore recommend it, believing it to be the best Dry Gas Meter manufactured.

CODE, HOPPER & GRATZ,
1500, 1502, 1504 FILBERT STREET,
PHILADELPHIA.

ROBERT JONES.] **JONES & LENNIG,** [JOSEPH LENNIG.

MANUFACTURERS OF

CUSTOMER METERS (Wet and Dry), STATION-METERS, EXPERIMENTAL METERS,
Show-Meters, Meter-Provers, Burner-Provers, Pressure-Registers, Pressure-Indicators, Pressure-Gauges, Mercury-Cups,
Governors, Centre-Seals, &c., &c.
Nos. 313 and 315 NEW MARKET STREET, above VINE, PHILADELPHIA, PA.



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An experience of over *fourteen years* gives us confidence in calling attention to the superior instruments, both Dry and Wet, we are now manufacturing.
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WROUGHT IRON WELDED TUBES,
For Gas, Steam or Water.

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Of Wrought or Cast Iron, screwed together, flush inside and out.

Gas Works Castings,
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Sheets Corrugated and Fitted for Roofing.
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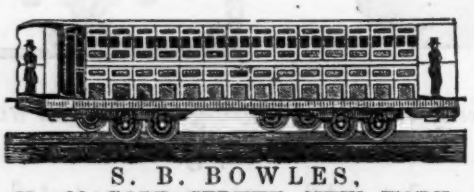

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No. 12 GOLD STREET, NEW YORK,
MANUFACTURER AND DEALER IN
Railroad Supplies,
Including Gas Apparatus for Cars, of the most improved design.

Patent Pyro Clay Gas Retorts,
THOS. HOADLEY, PATENTEE,
Wishes to call the attention of Gas Engineers to these Retorts as a very superior article.
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Gas-Light Works, Buffalo, N. Y.
" Cleveland, O.
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THOS. HOADLEY,
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It will not corrode the pen nor mould in the ink-stand.
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Retorts, Pipes, &c., &c.. always on hand,
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BRACKETS, PENDENTS, &C., IN BRONZE AND GILT.
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PLUMBERS AND GAS-FITTERS,
No. 12 East Twentieth Street, New York.

LOCKE, CRAIGIE & CO.,
Gas-Fittings, Chandeliers, Brackets, Globes, &c.
No. 927 Broadway, New York.
☞ Particular attention paid to country work.

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MANUFACTURES OF FIXTURES
FOR GAS LIGHT PURPOSES,
WOOD'S BUILDING,
No. 561 Broadway, New York,
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Gasometers, Retort House Roofs, Water Tanks, Purifying Boxes, Coal Cars, Coke Barrows, and all kinds of Wrought Iron Work for Bridges, Buildings, &c., &c.
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JOSEPH A. SABBATON, Engineer Manhattan Gas-Works, New York.
Col. W. S. CAMPBELL, Engineer Gas-Works, New Orleans.
P. A. SABBATON, Engineer Gas-Works, Albany.
WATERHOUSE & BOWES, Gas Engineers, Raleigh, N. C.
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SABBATON'S

PATENT IMPROVED

CAST-IRON FURNACE FRAME AND DOOR,

ARRANGED TO PROTECT THE IRON-WORK OF THE DOOR AND FRAME FROM DIRECT CONTACT WITH THE FIRE.

Fig.1 *Fig.2*

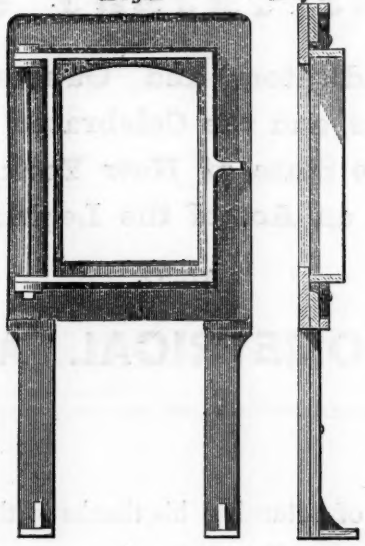

Fig. 1 is a front elevation and Fig. 2 a section. The frame and door are constructed in such a manner that the opening of the frame is considerably larger than the furnace mouth, and the door frame itself, which is also somewhat larger than the furnace mouth, shuts up against the brick-work or against a false frame that is placed between the frame and brick work. The door is filled with fire-brick or a slab of fire-clay, which the fire cannot injure. This only comes in contact with the fire; and as no air goes to the furnace in immediate contact with the lower part of the inside, a bank of unburnt coke or other fuel protects the inside of the lower part of the frame. One of these doors will last considerably longer than the ordinary ones, and the trouble and expense of replacing doors so frequently is saved. All the Frames and Doors that were first put up three years ago, are still in use and in good order.

For Sale only by **HERRING, FLOYD & KIBBE,**
SOLE PROPRIETORS,
740, 742, *and* 744 *Greenwich Street, New York.*

SABBATON'S PATENT SCREENING SHOVELS,

For Coke, Anthracite and other Coals, Apples, Vegetables, &c. The best Shovel ever made for lifting any article which requires screening. Made in all sizes of a very superior quality of MALLEABLE IRON. Is much lighter, more durable and in every respect superior to wrought iron.

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GAS COMPENSATORS OF ALL SIZES,

SELF-ACTING VALVES, EXHAUSTERS, upon an Improved Plan,

Costing less than half of those of English Manufacture.

ALSO, CASTINGS OF EVERY DESCRIPTION FOR GAS WORKS.

The above articles are shown in drawings and described in circulars published by Messrs. ELLIMAN BROTHERS, 217 Pearl Street, New York, and orders are received by them on the same terms as ourselves.

Orders for any of the above articles are also received through T. W. PARMELE, 4 Irving Place, New York.

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SAMUEL DOWN,

Nos. 340, 342, 344 AND 346 WEST TWENTY-SECOND STREET,

NORTH RIVER, NEW YORK CITY.

MANUFACTURER OF

WET AND DRY PATENT GAS METERS,

Pressure Registers, Pressure Indicators and Gauges, Station, Show, Customer and Experimenting Meters, and the Celebrated Testing Gas Holders* now used in the State of New York, in compliance with an Act of the Legislature.

ALSO,

THE PHOTOMETRICAL APPARATUS.

NEW YORK, June 25, 1859.

Mr. DOWN embraces this opportunity of returning his thanks to the Gas-Light Companies, Gas Engineers, and consumers generally, of the United States, the British Provinces, South America and Cuba, for the very liberal patronage he has received from them the past year, which has *greatly exceeded his most sanguine calculations;* the demand for his IMPROVED PATENT DRY GAS METERS having been, by *many thousands*, greater than any previous year. Mr. Down being a *practical mechanic*, and having given his *entire attention*, for over EIGHTEEN YEARS, to the manufacture and improvement of Gas Meters, claims, without fear of contradiction, a superiority for the Gas Meters manufactured by him over all others in the country, for the proof of which he would simply revert to the fact that he has always manufactured for the *Manhattan and New York Gas-Light Companies all the meters used by them;* and at present is also manufacturing meters for the most extensive companies in the Union, the British Provinces, South America and Cuba. *All meters manufactured by him are tested and sealed by the Gas Meter Inspector of the State, appointed by the Governor under the act of the last Legislature.* His present factory was erected in 1847, and he believes it is the most complete and extensive at present in the world, and his machinery for gas meter making far in advance, in all the new improvements, of any other manufacturer's in the country. He therefore deems it highly necessary to place Gas-Light Companies throughout the Union, British Provinces, South America and Cuba *on their guard* against all parties who are so industriously endeavoring to introduce to their notice PATENT DRY GAS METERS, *constructed precisely in imitation of his;* but with *Chinese-like characteristics*, without fully understanding the correct principles upon which they are made. Mr. DOWN respectfully invites purchasers to visit for inspection, at any time, his works and the materials used by him in his manufacture of Gas Meters, feeling assured that the result of such inspection will be the *undoubted conviction* of the correctness of his statement.

In conclusion, he would state that he is now prepared to manufacture the PHOTOMETRICAL APPARATUS according to the correct ENGLISH STANDARD, and will furnish, gratuitously, the directions for arranging the Photometer Room and the rules for the proper working of the apparatus.

Mr. Down is fully prepared at all times to execute, upon the shortest notice, all orders for Gas Meters, wet and dry, and the Photometer Apparatus, with the guarantee of entire satisfaction.

Illustrative Electrotypes will appear in the next number of the American Gas-Light Journal.

* The standard of measurement of this Gas-holder is given by Professors Torrey, of the Assay Office; Joy, of Columbia College; Gibbs, of the Free Academy, with several other distinguished scientific gentlemen.